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SODIO-BISMUTH TARTRATE AND PEPSIN.

By R. Rother.

That the profession of pharmacy is the natural custodian of the Pharmacopœia admits of no doubt. It does infinite credit to the medical profession to recognize and concede this fact. Now, whilst medicine has gracefully yielded full scope to the proper function of pharmacy, it cannot be said that pharmacy has been equally considerate to accept its rightful limits. Hence, as the imperfections of the system of medicine, pertaining to its agencies, are grievous obstacles to its own progress, it comes with rather ill grace from the system of pharmacy to prescribe its methods, or even to absorb its functions.

When the imperfections and irregularities of any system are very great, and out of all correspondence with the surrounding conditions, the time of its certain extinction is not remote. When, however, a system evinces considerable persistence, and shows some indications of general improvement, the probabilities are that the correspondences are numerous, and that the ill adapted and unadaptive features will eventually disappear.

A system of the first kind will be displaced in its totality by better systems. A system of the second kind will maintain itself by retaining its perfect parts and displacing all others by more correspondent portions. These various changes are necessarily slow, which to many seems insufferable.

The transition from the less to the more ethical presents all degrees of their mixture, and hence there is no time or place where the wholly unethical ends and the wholly ethical begins. This is a general principle, and holds universally, be it in a system, organism or individual.

In the two systems of medicine and pharmacy there is much of a certain irregularity termed quackery; but, where there is a relatively large amount of crudity, even coexistent with a forward tendency, as in these two cases, it is very difficult to find many individuals suffi-

ciently capable and right minded to escape the stigma wholly. As elsewhere, the discordant elements are here, sorted out in the general test of fitness; the gradual augmentation of better and better individuals incidentally perfects the whole. This makes it clear that quackery is but a relative term, and that it is by no means as special as it would seem.

The system of pharmacy, as voiced by its Pharmacopœia, declares that an extensive class of preparations, conventionally termed "scientific specialties," are essentially unscientific, that all endorsement of them should be withheld, and that their manufacture should be emphatically and systematically discouraged. Now, it is one of the best known facts in the business of pharmacy that the annual consumption of this class of goods is an enormous aggregate, and that physicians, by a large majority, and among them the most prominent, lavishly employ them. Even granting their utter worthlessness, it is presumption, to say the least, for pharmacy to decide this question. Under the circumstances, there is no better method calculated to perpetuate this so-called evil than to antagonize it by attempting to ignore it.

The Pharmacopœia at each revision incorporates long lists, and among them whole classes of articles that are scarcely known in a general way, and much less used. In consequence of this procedure each revision is also characterized by the dismissal of lists of articles equally long. In the main, there is obviously little difference between the members of the two lists; the only reason for the change seems to consist in giving all ephemerides a chance. It is, however, with the greatest difficulty that well-known and long popular material is admitted. This opposition even manifests itself in the dismissal of approved and staple compounds, of which at least a dozen can be readily enumerated. Now, whilst the last revision is especially characterized by an unusual addition of obsolete and absolute lumber, the most urgent needs have been mainly neglected. For instance, the rubber plasters should have been recognized; a much desired formula for carbolic oil was omitted; the highly useful and popular powdered extracts were forgotten; the long staple and nearly indispensable extract of meat, and its various adjunct compounds, were ignored; the favorite so-called acid phosphates, nutritive phosphates and albuminates should have been acceptably considered; emulsions in general and the highly popular and strongly staple emulsions of cod liver oil with adjunct compounds remained utterly unnoticed; the most con-

spicuous and important of all, the highest development of modern galenical pharmacy, the compound elixirs, were deliberately frowned down.

Now, in regard to most of these, and others similar to these, not mentioned, it can be said that their adoption would directly oppose the science and ethics of pharmacy, and that such endorsement would virtually pervert, if not obliterate, the progress of scientific pharmacy. Furthermore, it can be added that this system of ready-made prescriptions would not only intensify the irregular specialist evil, but would also react most injuriously on the practice of medicine itself. But, in answer, it can be said that the specific structure of the medical system is of no legitimate concern to pharmacy, and if the physician insists on demanding this, that and the other form of combination, the pharmacist can do no better than furnish the desideratum with the greatest possible alacrity and grace.

Now, the indubitable fact is there, and a very potent one, that there is a large demand for these products, and that they are continuously forthcoming, in utter contempt of the Pharmacopœia. Of course the system of pharmacy, if sufficiently co-ordinated, and consequently agreed upon standards, can dispense with the Pharmacopœia. But the purpose of the Pharmacopœia is to unify and authorize these standards, and hence the performance of this function consists in codifying the expressed law of the system. With this result achieved in perfect correspondence with the living tendencies, the obnoxious specialist must now subject his products to the dimensions of the standard, and change his identity accordingly, or wholly disappear.

If the system of medicine, with its modern agencies, is so entirely at variance with its environment that the correspondence, if any, is of the most imperfect kind, it will speedily be supplanted by a better system; but if the most essential parts are in the closest relation, and other important portions are yet more or less discordant, the necessary improvement will slowly follow. The extraneous system of pharmacy can exert little or no influence in this connection, but it cannot possibly do better for itself than modulate its own activities in sympathy with these changes.

The Pharmacopœia has incorporated pepsin as an official agent. It has given an excellent description of the article, but an excellent process for its preparation would have been infinitely more desirable. Most of the saccharated pepsin of commerce is chiefly dried mucus,

and its odor and taste are therefore comparably bad. A solution of pepsin is also official, but, in the writer's opinion, this is too acid and too dilute. The proportion of glycerin, when a full dose is given, is so great that it cannot fail to cause gastric distress. The proportion of pepsin can easily be tripled or quadrupled so that then a maximum dose will not contain an excesssive amount of glycerin. All indications tend to show that pepsin in very acid solutions soon deteriorates. It has been asserted with much stress that alkalies destroy pepsin. This is true only of very concentrated alkali; weak alkali, under a moderate period of exposure, does not perceptibly injure pepsin.

The pepsin whilst in the gastric glands is neutral, and possibly alkaline. It becomes acid only as it emerges from the ducts. Furthermore, the chief activity of the natural pepsin is exerted on the partially digested proteids after their entry into the alkaline intestinal fluids. In many cases of gastric disturbance the cause is said to be an excess of the natural acidity. On such occasions, an additional increment introduced with the pepsin must be prejudicial than otherwise. Hence, for these various reasons, the writer believes that, in addition to enhanced concentration, the solution should contain a minimum proportion of acid, consistent with complete solution of the pepsin.

The Pharmacopœia allows only 24 hours for the solution of the pepsin, which time appears insufficient. The writer, however, proposes an entirely new method, by means of the agency of heat. Under this new procedure one part of saccharated pepsin will perfectly dissolve during less than one hour's time in four parts of water containing one-eighth part of diluted chlorhydric acid, at a temperature not materially exceeding 40°C. The resulting solution obtained with a pepsin practically free from mucus will be void of sediment and but slightly opalescent. It will filter with uniform but only moderate speed to the end, and better without than with glycerin. The first portions passing through the filter are always turbid, and must be returned until the liquid drops perfectly clear. The glycerin is added to the filtrate in the proportion of a third or not less than three-tenths of the whole volume after mixture. The solution should represent one gram of saccharated pepsin in eight cc. or fluid grams. The preparation is much improved by employing orange flower water in the proportion of one-fourth of the finished volume. When a pepsin containing an admixture of mucus is used this impurity settles rather

compactly, so that after a moderate duration of repose the supernatant liquid may be decanted quite free from sediment. The mucus should be kept out of the filter, as it greatly impedes filtration. A solution of pepsin contaminated with mucus becomes more malodorous with age. The odor, however, does not possess a putrid character, neither does it resemble in intensity and obnoxiousness the perfectly execrable stench of the so-called scale pepsin. The odor caused by the presence of mucus seems to emanate from an acid body. Neutralization of the solution extinguishes the odor instantaneously and completely. On the slightest acidulation it as promptly and intensely reappears. Such a pepsin when dry is also immediately deodorized by the admixture of subnitrate of bismuth.

The writer believes that the Pharmacopœia should incorporate a process for the preparation of pepsin. It should direct the washed membranes to be extracted with a large volume of cold acidulated water. The practically clear macerate should then be treated with sodium chloride to saturation. The precipitated crude pepsin should then be collected, pressed into thin sheets, and dried in the open air. The dried residue should then be cut into shreds, and after rinsing with cold water be treated with about 40 parts of water containing one part of diluted chlorhydric acid, at a temperature not much in excess of 40°C., during the period of one to two hours. The nearly clear supernatant liquor is then mixed with a relatively large volume of filtered saturated solution of sodium chloride. The reprecipitated pepsin is then collected, pressed, mixed with some lactose, dried in the open air, powdered, and after assay mixed with lactose or either saccharose, so that the finished article contains about ten per cent. of real pepsin.

Whether pepsin has or has not any medicinal value is, in a pharmacinal aspect, of no consequence. The consideration to pharmacy is, does the medical system call for such goods, and can the articles be furnished?

A mixture of dry pepsin and subnitrate of bismuth is very popular with all practitioners, almost without exception. In consequence, a liquid form became desirable. This solution was then compounded with strychnine, and has in this form, as an elixir, become to be a great staple.

It appears that pepsin enters into chemical combination with various bismuth salts, some of the compounds being soluble and others insoluble. When a solution of ammonio-citrate of bismuth, representing 1 gram

of the normal citrate in 3 fluidgrams is mixed with a strong solution of pepsin, a dense gelatinous magma is formed, which readily dissolves on dilution. This soluble compound appears to be present in all alkaline, neutral or but slightly acid solutions prepared with the ammonio-citrate. Unless very alkaline, all of these solutions will eventually deposit most of the normal citrate in crystalline crusts. Alkaline solutions are also apt to deposit some of the bismuth as metal and the remainder as citrate. The various preparations of the market possess these characters in different degrees, having probably all a similar origin. A permanent acidulous solution has long been a desideratum.

The writer found ("American Journal Pharmacy," June, 1884) that bismuth citrate unites chemically with borax, forming a permanent solution having a decided acid reaction. But an admixture of pepsin solution causes a perceptible flocculent precipitate, possibly containing pepsin.

On treating one m. of dipotassio-bismuth citrate with one m. of boric acid an alkaline solution results. With two ms. of boric acid an acidulous product is obtained. Neither of these two compounds appears to disturb pepsin solutions, but both are objectionable from lack of sufficient acidity when united with pepsin in solutions more than ordinarily concentrated.

The writer found ("American Journal Pharmacy," July, 1884) that a certain proportion of monopotassio-bismuth citrate mixed in solution with the dipotassio salt imparted an acid reaction. The mixture formed permanent solutions with pepsin, and the writer gave a formula for such a preparation. This produced necessarily a weak form, and trial showed that a much more concentrated result with the desired acidity could not be obtained.

Owing to the intractable nature of the bismuth citrate in this connection the writer concluded to avoid its use, and find a more suitable bismuth salt to take its place.

The next experiments were made with tartaric acid. The writer could find nothing in text-books relating to the existence, the composition and preparation of a tartrate of bismuth. Bismuth oxynitrate or bismuthyl nitrate when heated with tartaric acid does not suffer decomposition, and hence no tartrate is formed under these conditions. When aided by some nitric acid a corresponding proportion of tartrate forms. When, however, enough nitric acid is added, so as to render the whole of the basic salt available, a perfect solution results. On

now gradually neutralizing the excess of nitric acid by means of sodium or potassium bicarbonate a seemingly crystalline normal bismuth tartrate precipitates. After about three-fourths of the nitric acid present has been neutralized all the bismuth will be converted into tartrate and thrown out of solution.

The writer deems this precipitate a normal salt, but has not determined its composition, and hence cannot state whether it is a hydrite or not. Its provisional formula may with great probability be indicated as Bi_2T_3. x Aq.

Different from the citrate, the tartrate enters into permanent and definite chemical union with normal monad tartrates, but in addition also forms basic or hydro-tartrates. The writer ascertained that the tartrate formed from a definite amount of bismuthyl nitrate, dissolved in a definite amount of normal sodium tartrate. The proportions were such that the salts reacted, molecule for molecule, as expressed by the following equation:

$$\begin{matrix} Bi{=}T \\ | \\ T \\ | \\ Bi{=}T \end{matrix} + Na_2T = 2\,(T{=}Bi{-}T{-}Na).$$

This double salt has a decided acid reaction. On evaporating its solution it is obtained in colorless transparent, non-deliquescent and readily soluble scales. Its composition as to water was not determined. A small proportion of tartaric acid has no effect upon this double salt, but a large amount appears to decompose it. When, however, an excess of normal citrate is present, tartaric acid may be added to any extent without effect. A new acid double tartrate evidently forms under these conditions, as follows:

$$BiT_2Na + NaHT = \begin{matrix} Na{-}T{-}Bi{-}T{-}Na \\ \qquad\qquad\quad | \\ \qquad\qquad\quad T{-}H. \end{matrix}$$

If a solution of the normal double tartrate is added to a neutralized solution of pepsin, a voluminous precipitate appears in gelatinous flakes. On the addition of sodium bicarbonate, this precipitate promptly redissolves, leaving a solution which still retains a decided acid reaction. It is also a remarkable fact that the addition of tartaric acid does not now cause a reappearance of the precipitate.

These results and the subsequent products obtained by them show

that a concentrated and decidedly acidulous but, above all, permanent solution of bismuth and pepsin can be produced.

When the composition of the normal bismuth tartrate and the normal sodio-bismuth tartrate have been determined, and either of these salts can be readily procured in the open market, the production of bismuth and pepsin solutions will be greatly facilitated and simplified. In the meantime the preliminary preparation of the bismuth tartrate must constitute part of the process.

The writer believes that an elixir will be the most acceptable form, and that it should possess the concentration which the prevalent doses of the compounds of the market indicate; that is, one teaspoonful of the elixir should contain an average dose of each ingredient.

In the formula which the writer proposes, orange flower water is used, as this is more durable and acceptable than the aromatic jumble that is generally employed. Glycerin is used instead of sugar, since it is presumed to aid in retaining the activity of the pepsin. Alcohol is added to keep the proportion of glycerin at a minimum. The preparation is compounded with strychnine, as this form is by far the best known and most popular. The preparation is adjusted by volume, and each teaspoonful represents about eight grains of saccharated pepsin, the equivalent of one grain of bismuth citrate, and about one-sixty-fourth of a grain of strychnine. The formula is as follows:

Pepsin, saccharated	100 grams.
Bismuth subnitrate	10·5 "
Strychnine	·21 "
Chlorhydric acid, diluted	12·5 f. grams.
Alcohol	50 "
Glycerin	200 "
Orange flower water	200 "
Nitric acid	
Tartaric acid	
Sodium bicarbonate	
Water	of each sufficient to make 800 fluidgrams.

Mix the bismuth subnitrate with 40 fluidgrams of water, and gradually add nitric acid, with constant stirring, until a clear solution is obtained. To this now add 7·65 grams of tartaric acid and 80 fluidgrams of water. The solution is then treated with sodium bicarbonate until about three-fourths of the nitric acid is neutralized. The crystalline magma of bismuth tartrate is now poured upon a plain filter and washed with water till practically free from nitric acid. Now

mix 2·9 grams of sodium bicarbonate with 5 fluidgrams of water, and gradually add 2·55 grams of tartaric acid. With this solution mix the washed bismuth tartrate and stir them together occasionally until a clear solution has resulted.

Mix the diluted chlorhydric acid with water to the measure of 200 fluidgrams, and add the orange flower water. Pour this mixture upon the saccharated pepsin, and transfer the resulting magma to a bottle having double the capacity; cork it well, and immerse it in a water-bath having a constant temperature of 40°C. for the time of one hour, shaking the bottle at intervals. Pour the resulting pepsin solution into a beaker, or graduated measure, and add sodium bicarbonate until neutralization is effected. To this liquid then add the solution of bismuth sodio-tartrate, and carefully follow with more sodium bicarbonate until the gelatinous precipitate which had formed is redissolved. Now incorporate the strychnine and 2 grams of tartaric acid; transfer the solution to a filter, returning the first turbid portions that pass, and when all the liquid has passed through follow with water, if necessary, through the filter, so that the filtrate measures 550 fluidgrams. To this now add the alcohol and glycerin previously united, and mix the whole.

Opionin is a body obtained by O. Hesse from Smyrna opium, by treating it at ordinary temperature with an excess of milk of lime, supersaturating the solution with excess of acetic acid and concentrating to a weight equal to that of the opium. The brown flocculent mass which separates contains gypsum, and yields to ammonia the opionin, which is precipitated from the filtrate by hydrochloric or acetic acid. It forms concentric groups of small needles, melts and turns brown at 227° C., is easily soluble in alcohol and ether, sparingly soluble in boiling water, is neutral to test paper and seems to be free from nitrogen. Its solutions in alkalies are yellow, but acids separate it as a nearly colorless crystalline precipitate. On warming its alcoholic solution yields with ferric chloride a flocculent brown-red precipitate. On boiling its solution with lime, a crystalline acid soluble in water and ether is formed. On melting opionin with potassa, *opionylic acid* is formed which is likewise freely soluble in water and ether and crystallizes in dense colorless prisms.—*Liebig's Annalen, vol.* 228, p. 299–300.

THE FRUIT OF ILLICIUM ANISATUM, Loureiro.

By Carl E. Schlegel, Ph.G.

From an Inaugural Essay.

The glossy brown-yellow seeds were removed, and the capsules reduced to a No. 80 powder. This powder, dried at 100°C., until it ceased to lose weight, was found to contain 10·36 per cent. of moisture and volatile oil. On incinerating this dried powder there remained 3·5 per cent. of *ash*, the acid solution of which showed that there were present the bases: K, Na, Fe and Al; also hydrochloric, sulphuric and phosphoric acids.

A proximate analysis of the drug, gave the following results:

Portion soluble in petroleum spirit.—Twenty gm. of powder were exhausted with petroleum spirit by repeated maceration and decantation, and the petroleum spirit distilled off, until 200 Ccm. remained. A portion of it was allowed to evaporate spontaneously, the residue amounting to 5·875 per cent. of the whole, which residue had the appearance of a thick oily dark-green liquid, of a strong distinct anise odor. On adding strong sulphuric acid to a solution of a portion of it in chloroform, it turned yellow, then brown, and rapidly deep red. These characteristic colorations, combined with its odor, proved it to contain oil of star anise.

To another portion of the liquid, 95 per cent. alcohol was added, which completely dissolved it. On adding to this alcoholic solution a solution of sodic hydrate, applying moderate heat, and shaking it, it failed to saponify, proving the absence of fixed oil.

The liquid was found to contain 4·675 per cent. of volatile oil. On heating in a water-bath at 100° C. a portion of the liquid, for eight hours, this volatile oil was all driven off, and then remained 1·2 per cent. of green wax, fusing at 51° C.

Portion soluble in stronger ether.—The residue from the petroleum spirit extraction, dried and freed from all traces of petroleum spirit, was exhausted with stronger ether by maceration and decantation, and the liquid then subjected to distillation until 200 Ccm. remained in the retort. This was allowed to evaporate spontaneously, and there remained a solid residue of 1·2 per cent. Of this residue 30 per cent. was soluble in water, and 70 per cent. soluble in absolute alcohol. The aqueous solution gave with ferric chloride an inky greenish black

color; with gelatin no precipitate; with lead acetate a grayish precipitate; and with ammonic hydrate a green color, immediately changing to reddish-brown. From these reactions it may be inferred that the aqueous solution probably contained gallic acid. The portion soluble in absolute alcohol was found to be a resinous substance, partially soluble in aqueous solution of caustic potassa.

Portion soluble in absolute alcohol.—The residue from the ether extract, dried, was exhausted with absolute alcohol, and from the tincture the alcohol was distilled off, until 200 Ccm. remained. This was allowed to evaporate spontaneously and left a residue amounting to 3·75 per cent. This residue was completely soluble in distilled water. The aqueous solution of this residue was then made acid in reaction, and successively shaken up with petroleum, benzol, ether and chloroform, but gave no noteworthy results.

After having removed from this aqueous solution all traces of the other solvents, it was made alkaline. Upon shaking this solution with petroleum, decanting the petroleum, and evaporating spontaneously, there remained a crystalline principle of very strong musk odor, but which corresponded neither to the reactions of an alkaloid, nor those of a glucoside. Subsequent shakings with benzol, ether and chloroform, showed nothing of value.

Portion soluble in distilled water.—The residue from the alcohol extraction dried, was exhausted with distilled water by maceration and on evaporation, and drying a portion of this liquid in a water-bath, the residue amounted to 0·94 per cent. A portion of the aqueous extract was acidified and successively agitated with petroleum, benzol, ether and chloroform; but on evaporatiug these several shakings no crystalline residue was observed. This same portion was then carefully heated to expel all traces of the other solvents, and was then made alkaline. Here likewise, no results were obtained by agitating with the same solvents.

To 20 Ccm of the aqueous extract, 35 Ccm. of alcohol (95 per cent.) were added, and allowed to stand in a cool place for twenty-four hours. It was found that all the gum had been precipitated, which precipitate was then removed to a filter, and washed with alcohol of 66 per cent, carefully dried to a constant weight, the gum was found to amount to two per cent. of the whole. It was completely soluble in water, and formed a mucilage therewith.

The acrid taste of the aqueous extract, and its frothing, when shaken

up, indicated the possible presence of saponin, hence the necessary tests were made as follows: To a portion of the aqueous extract, baryta-water was added, and this allowed to stand in a cool place for forty-eight hours. This caused quite a large precipitate, which was removed to a filter, and repeatedly washed with saturated baryta-water. The precipitate was then removed from the filter, mixed with a little distilled water, and carbonic acid gas passed into it. This broke up the compound, which had been formed with the baryta, and the principle remained in solution. The filtrate was shaken up with chloroform, which took up the principle from its watery solution, and on evaporating left it in an amorphous condition. In contact with a few drops of concentrated sulphuric acid, after some time it gradually assumed a reddish color. A portion of the principle in solution was boiled with a little acid, and then treated with freshly prepared Fehling's solution; the blue color immediately changed to green, and a brownish-red precipitate, consisting of cuprous oxide resulted. A portion of the solution formed an insoluble compound with basic acetate of lead. All these reactions go to show that the principle in question was the glucoside saponin.

Syzygium Jambolanum, *De Cand.* The fruit of this tree is stated by Banetrala to have been used with good results in glycosuria, causing within 48 hours after its administration a considerable decrease in the amount of urine, and a complete disappearance of sugar. The rind of the fruit is said to contain the active principle ("Rev. de Thérap.;" "Lond. Med. Record").

The medicinal uses of this tree have been briefly referred to in this Journal, 1882, p. 351. Its leaves differ from those of most other myrtles in not being pellucid punctate; they are short petiolate, 3 or 4 inches long, smooth, leathery, varying between oval and obovate-oblong, and between acuminate and very obtuse, the West Indian form being rounded at the apex. The flowers are in lateral paniculate cymes, clustered and have the calyx limb truncate or nearly entire. While the ovary is two-celled and multovulate, the berry is one-celled and contains only one or a few seeds. The seed is globular and the embryo consists of two fleshy hemispherical peltate cotyledons, the short radicle being attached to their lower half, and concealed between them.

J. M. M.

MENTHOL.

Brief Abstracts from Theses.

Elmer B. Kyle, Ph. G. mentions the following among the properties of menthol. When thrown upon water currents are produced to and from the dissolving crystals, similar to the motions observed under the same condition with camphor. Menthol liquefies with chloral, thymol and camphor, and this action is particularly noticeable with thymol, crystals of the two substances, placed in contact, being in a few minutes transformed into a thick oily liquid. On gently heating a mixture of one drachm of the aqueous solution of menthol with half a drachm of a solution of one grain iodine and five grains potassium iodide in two drachms of water with a small quantity of potassa solution, the characteristic odor of iodoform is observed. The aqueous solution is not disturbed by ferric chloride or bromine water, but yields a slight turbidity with chlorine water. One grain of menthol yields, with 120 drops of sulphuric acid, a brownish-red liquid of a very disagreeable odor, and on the addition of a little potassium bichromate becomes chrome-green, the color remaining unaltered for several weeks. Menthol slightly warmed with nitric acid yields a thick wine colored oily liquid, and at a higher heat red fumes are given off; on neutralizing now with ammonia, a precipitate was observed, which was soluble in alcohol, the solution, when evaporated yielding an indistinctly crystalline mass.

Frank T. Landis, Ph. G., gives a history of the preparation of the oil and of menthol in Japan, and of the chemical and medical properties of menthol.

Wm. J. Laval, Ph.G., examined two samples of Japanese menthol and one of pipmenthol, and found them to differ mainly in the fusing point which for the latter was 40° C and for the two other specimens 35° and 36·5° C. The specific gravity was ·9002 and ·9004, and for pipmenthol ·9003. At 39° C. 1 Gm. of alcohol dissolved 8·327 Gm. of menthol, and 20 Gm. of water took up ·031 Gm. of menthol. This is insoluble in hydrochloric acid, not affected by alkalies, sparingly soluble in glycerin, somewhat soluble in warm acetic acid, decomposed on being heated with nitric acid, the mint odor disappearing almost entirely, and under the influence of hot sulphuric acid is changed into a dark brown or black liquid.

Bromine reacts violently with menthol, vapors of hydrobromic acid being given off, while a dark purplish oily liquid remains. From the solutions in ether or chloroform menthol is obtained in feathery or somewhat stellately arranged needles. Sodium introduced into melted menthol, liberates hydrogen and a glassy mass is left, which on exposure becomes brown, opaque and deliquescent.

A very good vehicle for the application of menthol is oleic acid in which it is freely soluble, and as an application in toothache a solution is very serviceable in the proportion of 20 grains of menthol in one and a half drachms of chloroform.

MATERIA MEDICA OF THE NEW MEXICAN PHARMACOPŒIA.

By the Editor.

(Continued from page 389.)

Cardo santo, Cirsium mexicanum, *De Cand.;* Compositæ. The leaves and flowers are used in place of the European blessed thistle, and possess stomachic, febrifuge and sudorific properties; the flowers also that of coagulating milk.

Carrizo, Arundo Donax, *Lin.;* Graminaceæ; grows in Mexico and other countries. The rhizome is sudorific and diuretic.

Cascalote, Cæsalpinia coriaria, *Willdenow;* Leguminosæ; in hot and humid regions of the western slope of the Mexican Cordillera. The fruit, which, according to P. Alcocer, of Mexico, contains 30 per cent. of tannin and 17 per cent. of gallic acid, is used for tanning, and in medicine as an astringent.

Cebadilla de Tierra caliente, Veratrum officinale, *Schlechtendal* (Asagræa tenuifolia, *Martius et Galeoti*). The capsules are three-celled, papyraceous, light reddish gray, the cells several seeded, and the seeds blackish, sword-shaped, rugose, sharp-pointed, of a bitter and acrid taste, and produce a copious flow of the saliva.

Cebadilla del Interior, Veratrum Sabadilla, *Retzius* (V. virescens, *Mart. et Gal.*). The fruit differs from the preceding in being more rounded and like the seeds of a darker color.

Cebadilla del Valle de México, Veratrum frigidum, *Schlechtendal.* The capsules are much larger and longer, and of a lighter color, like the seeds, which assume a yellowish tint and are collected before completely ripened.

The bulbs of the three plants are known in Mexico as cebolleja, cebolleta or cintul, are used like the fruit, and are believed to possess identical properties, but they have not been analyzed. The fruit is rarely employed internally; the powder is used as an insecticide and errhine, and the tincture as a stimulating embrocation. The capsules of Pentstemon barbatum and other species, known as chilpantlacol, are sometimes fraudulently substituted for the former, but are easily distinguished by the grayish yellow color, a somewhat horny texture, and the numerous seeds, which are not sword-shaped. The more important botanical distinctions between the two fruits are as follows: The capsules of the veratrums become three-lobed, and separate into three carpels, opening by their ventral sutures, while the capsules of pentstemon are two-celled, have a central placenta, and open by four valves.

Cedro colorado, Cedrela odorata, *Lin.;* Meliaceæ; in hot localities of Mexico. The bark is very bitter, and is reputed to be febrifuge and anti-epileptic; the decoction of the leaves is used for curing tooth-ache, and the resin is employed in bronchitis.

Cedron, Lippia citriodora, *Kunth.* See July number, p. 333.

Ceiba, Ceibo, Eriodendron anfractuosum, *De Cand.;* Bombaceæ; in Tamaulipas, Yucatan and other hot and damp regions of the Republic. The cotton investing the seeds is used for stuffing cushions, etc.

Cera de Campeche is obtained from different Mexican bees of the genus Melipona; partieularly from Mel. domestica, commonly known as Abeja alazana, etc. It is seen in commerce in lumps of several kilos in weight, or in oblong cakes, wrapped in maize leaves, and weighing not over 500 grams. It is opaque, yellowish, or after exposure to the air gray, internally of a much lighter yellow and fallow tint; though of a rather soft consistence, it preserves its shape, but may be moulded between the fingers and becomes adherent; it has a peculiar odor and aromatic taste, melts at 53°C., and burns with a bright and sooty flame. Ether dissolves from this wax, besides the aromatic principle, a yellow substance, which is softer, more adhesive, and more readily fusible than the wax; the residue insoluble in ether is waxy, white, hard, brittle and less readily fusible. The wax is adulterated with suet, acquiring thereby a lower melting point and greater adhesiveness; and with resinous substances, which increase the

melting point, render thin layers of the wax brittle, and are mostly soluble in alcohol. The wax is used in ointments and plasters.

Ciprés comun, Cupressus sempervirens, *Lin.*, and Ciprés de México, Cupr. Benthami, *Gordon.* The astringent cones are incorrectly called "agallas" (nutgalls) and enter into several pharmaceutical preparations.

Ciruelillo, Bunchosia lanceolata, *Botteri;* Malpighiaceæ; in the State of Vera Cruz. The root bark yields an astringent extract resembling kino.

Ciruelo agrio, Spondias Mombin, *Lin.;* Terebinthaceæ; in hot regions of Mexico. The comestible fruit has an acidulous and resinous taste.

Ciruelo de México, Spondias purpurea, *Lin.* The fruit is smaller than the preceding, and has a sweet, somewhat acidulous, resinous and balsamic taste; comestible.

Clavillo, Juliana caryophyllata, *La Llave;* Zygophyllaceæ; in Tlalpam and other localities. The leaves are stimulant.

Coclearia, Cochlearia officinalis, *Lin.;* Cruciferæ. In its place, Lepidium latifolium, *Lin.*, is used in Mexico as an antiscorbutic, the expressed juice being given in doses of 60 to 150 Gm. a day.

Coco, Cocos nucifera, *Lin.;* Palmæ; in hot districts of Mexico. The roots are used in diarrhœas for their astringent properties, the pith and terminal bud for food, the flowers for their pectoral properties, and the green fruit as a hemostatic; the fermented juice furnishes a very agreeable liquor. The uses of the cocoa nut and of the oil are well known.

Colchicum alpinum, *De Cand.;* is met with in Mexico, according to Oliva, and appears to have the same properties as Colch. autumnale.

Colorin, Erythrina coralloides, *Flor. Mex. ined.;* Leguminosæ; in Mexico and South America. The seeds are elliptic, smooth, glossy, coral-red, with a salient longitudinal line on the back, and with a white hilum, surrounded with a black border. The analysis by Rio de la Loza showed these seeds to contain 13·35 solid and liquid fat, 0·32 resin soluble in ether, 13·47 resin soluble in alcohol, 1·61 erythrocoralloidine, an alkaloid, 5·60 albumen, 0·83 gum, 1·55 sugar, 0·42 organic acid, 15·87 starch, 7·15 moisture and 39·15 inorganic matter (and cellulose?). The seeds are very poisonous. The flowers are used for food and the white wood for bungs, and in San Luis Potosí for making various figures.

Colorin chiquito, Rhynchosia precatoria, *H. B. K.;* Leguminosæ; in Cuernavaca and other hot districts. The seeds are reniform, somewhat compressed at the base, and from the hilum partly red and partly black. They are popularly supposed to act upon the brain, producing loss of memory; but, according to Dr. Altamirano, of Mexico, who experimented with the alcoholic extract, this belief is unfounded, although toxic principles appear to exist in these seeds.

Colorin de peces, Piscidia Erythrina, *Lin.;* in the State of Guerrero. The tincture of the root bark is recommended for toothache. The practice of stupefying fish by means of this plant should be prohibited.

Cominos rústicos, the fruit of a Mexican umbelliferous plant; aromatic and resembling fennel. It is referred to Thapsia Asclepium, *Lin. (?);* but Oliva regards as identical with it the fruit which in Jalisco is called acocote, and is derived from Pentacripta atropurpurea.

Contrayerba, Dorstenia Contrayerva and D. Houstoni, *Lin.;* Moreæ. The former grows in the State of Vera Cruz and other localities, and is known as barbudilla; the latter is found in Campeachy and seems to be Drake's root. Both roots are stimulant, diaphoretic and antiperiodic. The root of Asclepias sestosa, *Bentham*, is known as Contrayerba de Julimes, and, according to Cal, possesses the same properties and even appears to be superior to the preceding.

Copal, Goma de limon, from Elaphrium copalliferum, *Flor. Mex. ined.;* Rutaceæ; in the hot regions of the western part of the republic. The resin is obtained by incisions made on the shrub, and is met with in commerce in semicylindrical pieces, brittle, glossy, transparent on the flat side, opaque on the convex side, and covered with earth; it has a balsamic odor and an aromatic taste, softens between the teeth like mastic, melts at 74°C., and gradually loses its transparency and becomes yellow. It has the balsamic properties of similar resins, but is not used in medicine except as a substitute for elemi in ointments.

Copalchi, the bitter bark of various trees, generally called campanillo. The bark most commonly met with is that of Croton niveum, *Jacquin*, s. C. Pseudochina, *Schiede*, which grows in Oaxaca, Plan del Rio, Tampico, Tehuantepec, between the Laguna verde and Actopan (where it is known as quina blanca, according to Schiede), in the Sierra de San Pedro, etc. Also C. reflexifolium, *H. B. K.*, which grows in Acapulco, Huasteca, Paso del Correo, on the river Teculata, etc., and is often confounded with the preceding species. Another

larger and more bitter bark has been referred to Croton suberosum, *Kunth.* According to Oliva, Coutarea lateriflora, *De Cand.*, Rubiaceæ, is known in Autlan as campanillo, and its bark is the copalchi of Guadalajara; and Jimenez states that Hedwigia balsamifera, *Swartz*, is called copalchi in Orizaba.

Corteza de Drimis. Drymis mexicana, *De Cand.*, grows in hot regions of the western slope of the Mexican cordillera; Dr. granatensis, *De Cand.*, in Nueva Granada. The bark is stimulant, tonic and aromatic. Dose, in powder, 1 to 8 Gm.; the infusion, 8 Gm. to a liter of water; the tincture, 10 Gm.

Costomate, Capuli, Physalis Costomatl, *Mociño et Sessé;* Solanaceæ; in temperate sections of Mexico. The fruit is comestible, and the leaves are diuretic.

Crameria. Besides the Peruvian Krameria triandra, the two Mexican species Kr. pauciflora and secundiflora, *Fl. Mex. ined.*, are mentioned as the principal sources of this drug, which, however, is not described.

Cuajilote, Parmentiera edulis, *De Cand.;* Bignoniaceæ; in Yautepec and other hot districts. According to Oliva the root is diuretic, and a decoction of the leaves is useful in external otitis.

Cuajiote, Rhus perniciosa, *H. B. K.;* Terebinthaceæ; in Tepecacuilco and other hot districts. The gum resin, which exudes spontaneously, is commonly known as goma archipin. It is seen in globular masses, in tears or in irregular fragments, and varies in color between milk white, yellowish, reddish-yellow and brown, sometimes with greenish or bluish green spots; fracture glassy; spec. grav. at 18° C. 0·9383; inodorous, persistently bitter; readily emulsionized with water; when thrown in the fire, decrepitates and gives a slight smoke. Rio de la Loza found it to contain 34 gum and 44 bitter resin soluble in alcohol and ether, the remainder consisting of moisture, salts of calcium and magnesium and of extraneous matter. It is used as a purgative and diuretic (dose?) and the thick emulsion as a cement for ivory, glass, porcelain, etc.

Cuasia. Quassia amara, *Lin.*, and Picræna excelsa, *Lindley*, are used, but the wood of Rhus Metopium is also sold under this name and is distinguished by its gray color with black spots, and by the precipitate of its aqueous infusion with sulphate of iron.

Cuautecomate, Crescentia alata, *H. B. K.;* Bignoniaceæ; in Colima, Autlan, Acapulco and other hot districts. The fruit is a round, woody, smooth berry, marked with a circular scar from the peduncle, one-

celled, many-seeded, and filled with a pulp which in the fresh state is greenish white, but after drying is black, and then resembles the pulp of cassia fistula; it contains much sugar, a notable quantity of gum, tannin and woody fibres. The pulp is recommended as an excellent remedy for allaying cough and in contusions. The leaves are astringent, and are used in diarrhœas, also for promoting the growth of the hair and preventing its falling out.

Cuauchalata, Rajania subsamarata, *Fl. Mex. ined.;* Dioscoreaceæ; in Matamoras, etc. The bark is astringent.

GLEANINGS FROM FOREIGN JOURNALS.

By J. Robert Moechel.

Purification of Potable Waters.—The process given by Prof. Almén is recommended by Prof. Th. Husemann. To 1 liter water add 3 cc. of a 5 per cent. solution of chloride of iron and also a quantity of lime-water corresponding to the hardness of the water, about 50 cc. The resulting brown precipitate is a basic iron salt and hydrated iron-oxide, which may be separated by straining or filtering through sand. 40 to 80 per cent. of the dissolved organic matters, besides the suspended organic matters, are said to be precipitated by this process.—*Schwig. W. f. Ph.*, No. 21, 1885.

Phenol and Chloral hydrate mixed in the proportion of 17 to 10 give a liquid which is miscible with water in all proportions.—*L' Union Pharmac.*; *Leitm. Rdsch.*, No. 23, 1885.

Solutions of Iodine in Oils.—The 20 per cent. solution in castor oil is of a brown color and thick; in olive and almond oil of brownish red color and somewhat thinner. For practical purposes the solution in castor oil is of special interest as being miscible with strong alcohol and mitigating some inconveniences resulting from the use of tincture of iodine. G. Greuel recommends the following formula: Dissolve with a gentle heat iodine 10, in castor oil, and alcohol (93 per cent.) each 45.—*Archiv d. Phar.*, June, 1885.

Boric Acid is recommended by Artimini in epidemics of cholera, etc., as an antiseptic and for destroying microorganisms, and as being not injurious if taken in small doses, which may be added to food or drink—*L'Orosi*, 8, p. 44; *Archiv d. Phar.*, Mai, 1885.

The symptoms of poisoning by boric acid, according to Molodenkow,

are continual vomiting and hiccough, the appearance of red spots in the face and diminution of the number of heart-beats. In one case death followed in four days. Stimulants and morphine are recommended as antidotes.—*Journ. de Pharm. Chim.*; *Archiv.* June, 1885.

By-product in bread baking.—Experiments reported by R. K. for the recovery of the alcohol eliminated by the baking process gave the following result: On baking 3 kilos of dough 150 Gm. of distillate of 0·9801 sp. gr. were obtained, equal to spirit of 13 per cent. or 15·6 grams of alcohol. Supposing that the oven be used four times a day for baking 50 loaves of bread, weighing 2 kilos each, the liquid condensed by means of suitable arrangements during a year, would contain 730 liters of alcohol.—*Schweiz. W.f. Ph.*, No. 24, 1885.

Paraldehyde as an antidote to Strychnine is recommended by Prof. Arpád Bókai, Cervello and Dujardin-Beaumetz. Bókai also found it valuable as a counter-poison to brucine, thebaine, picrotoxin.—*Chem. Ztg.*, No. 54, 1885.

Preparation of Cocaïne.—Truphème recommends exhausting the coca leaves with ether, distilling the ether, treating the remainder with boiling water, mixing with magnesia and drying. The powder thus obtained is exhausted with amylic alcohol which yields the cocaïne somewhat yellowish; by recrystallization it is obtained colorless.—*Ann. di Chim. Med. Farm.*, Feb., 1885; *Archiv d. Phar*, Mai, 1885.

Cotton Seed.—Sacc has communicated to the Acad. d. Sciences an analysis of the press cake of cotton seed, which contains casein 6·0, dextrin 0·2, sugar 2·0, fibrin 23·7, woody tissue 32·1, starch 9·6, greenish yellow oil 9·6, yellow wax 0·8, water 8·0, and ash 8·0. On grinding, 56·5 of yellowish meal and 40·5 of black bran were obtained. The author regards the meal as being of value in bread baking for taking the place of milk, and in the refining of sugar for removing excess of lime.—*Archiv d Phar.*, June, 1885, p. 453.

Estimation of Casein in Milk.—Frenzel and Weil recommend diluted sulphuric acid in place of acetic acid for precipitation. In a beaker glass of 150 cc. capacity, place 60 cc. distilled water, add 20 cc. of well-shaken milk by means of a pipette and stir well. Then add 30 cc. dilute sulphuric acid (1:1000), put in a cool place for several hours, pass the supernatant liquid through a weighed filter, collect the precipitate upon the same filter, wash twice with water, and afterwards successively with 90 per cent. alcohol, absolute alcohol and ether. Dry at 110°C. to a constant weight, then incinerate and subtract the

weight of the ash from the weight of the precipitated casein.—*Ztsch. f. Physiol. Chem.*, 1885. p. 246; *Archiv d. Ph.*, Mai, 1885.

Preservative Salt for Meat.—Sodium chloride 8, potassium nitrate 1, salicylic acid 1; mix. To be rubbed on the meat, fish, etc. Before using the meat thus preserved wash repeatedly with cold water.—*Rundsch. Leit.*, 1885, p. 400.

Remedy for Toothache.—Prof. Ludovici, in "Pharm. Italian," recommends: Dry extract of opium, camphor, balsam of Peru each 0·5, mastic 1, chloroform 10. To be applied in the cavities of carious teeth.—*Ibid.*

Linctus Phosphoricus.—Mix intimately, so as to form an emulsion, phosphorus 0·01, expressed oil of almond 30·0, powdered gum arabic 15·0, sugar 15·0 and sufficient water. The dose is a teaspoonful daily. —*Ph. Ztg.*, No. 56, 1885.

Poison for Bedbugs.—Dissolve camphor 2 oz., corrosive sublimate 1 oz., and oil of turpentine 4 oz., in alcohol 1 pint.

Black Ink disappearing after a short time.—Boil nutgalls in whisky, add Roman vitriol and sal ammoniac and when cold dissolve in the liquid a little gum arabic. Writing with this ink will disappear in 24 hours.

Mucilage for Mineralogical Specimens.—Dissolve 1 part gum arabic in water, add 4 parts of sugar and 1 part of starch and boil.

Paste for Tin Cans.—Dissolve Venice turpentine in a little alcohol and incorporate with starch paste while warm. Another paste is obtained by softening glue in water, then boiling it with strong vinegar and thickening the liquid during boiling with fine wheat flour so that a paste results.

OINTMENT FOR SORE NIPPLES.—Groussin ("Éclaireur pharm.;" "Lyon méd.") recommends for application to sore nipples in nursing women an ointment composed of equal parts of white sugar, oxide of zinc, gum arabic, and glycerin.—*N. Y. Med. Jour.*, June 20, 1885.

CHRYSAROBIN IN LIQUOR GUTTA-PERCHÆ.—In a note upon the treatof ringworm of the scalp, Dr. W. T. Alexander recommends epilation and the use of a ten per cent. solution of chrysarobin in liquor gutta-perchæ, which forms a pellicle upon the surface, preventing the further extension of the disease. This treatment was very successful.—*Journal of Cutaneous and Venereal Diseases*, February, 1885; *Med. Times.*

PHARMACEUTICAL PREPARATIONS OF THE MEXICAN PHARMACOPŒIA.

By the Editor.

(Continued from page 376.)

Harinas emolientes, Farinæ emollientes.—Powdered flaxseed and mallow herb, equal parts.

Hidralcohol aromático, Hydralcohol aromaticus.—Digest for ten days aromatic species 100, alcohol (85 per cent.) 200, water 800, Cologne water 50, express and filter. A substitute for aromatic wine.

Inyeccion con Subnitrato de Bismuto, Injectio cum Subnitrate bismuthico.—Bismuth subnitrate 15, gum arabic 10, water 100.

Inyeccion con Tanino, Injectio cum Tannins.—Tannio 1, water 100.

Inyecciones subcutáneas.—Full instructions are given for applying hypodermic injections; the dose is stated to be for aconitine 0·5 to 2 mgm.; veratrine 0·5 to 1 mgm.; colchicine 2 mgm.; digitalin 1 to 3 mgm. The formulas direct the solutions to be made from 1 part of morphine hydrochlorate or sulphate, atropine sulphate or strychnine sulphate in 100 parts of water. The injection of quinine sulphate is made in the proportion of 1:10 with the aid of a little sulphuric acid. The injection of ergot is made from the aqueous extract, by precipitating with strong alcohol, decolorizing the filtrate by means of animal charcoal, evaporating the alcohol, and adding water to make the weight equal to that of the ergot used; the solution is preserved by dissolving in 100 gm. of it 0·15 gm. of salicylic acid.

Jabon animal, animal soap, is the soda soap of ox-marrow, and Jabon medicinal the soda soap of sesame oil; the latter is intended for internal use in the dose of 0·5 to 4·0 gm.

The syrups with the exception of those containing alcohol or acidulous juices, have at 15°C. a density ranging from 1·261 to 1·321. The following differ more or less from the syrups ordered by other authorities.

Jarabe atemperante (temperante), Syrupus temperans.—Equal parts of the syrups of red poppy petals and of lemon juice.

Jarabe balsámico, Syrupus de Balsamo tolutano.—Dissolve tolu 60 in alcohol 50, and impregnate with this solution cotton 17; then mix

intimately with cotton 33, loosen the cotton by picking, and expose to the air until the alcohol has been evaporated; now digest for two hours in water 500, express and again digest in the same quantity of water; mix the infusions, filter after cooling, and in every 100 parts of the filtrate dissolve 190 parts of sugar.

The syrups of benzoin and of storax are prepared in the same manner.

Jarabe de Belladona, Syrupus de Belladonnâ is one-half the strength of that of the French Codex and is made with tincture of belladonna 75 and simple syrup 1925.

Jarabe de Acónito is four times stronger than the French preparation, and is made by mixing tincture of fresh aconite leaves 100 and simple syrup 900.

Jarabe de Cuautecomate, Syrupus de fructibus Crescentiæ alatæ.—Pulp of the fruit 100, water 300; macerate for twelve hours with frequent agitation, express, strain and boil with sugar 500 until the boiling syrup has a density of 30° B.

Jarabe de extracto de Opio, Syrupus cum extracte Opii, contains in 1,000 parts, 2 parts of extract of opium, and is just four times stronger than the Jarabe diacodion.

The fruit syrups of quince, pomegranate, lemon, mulberry, blackberry, pineapple and of Bromelia Pinguin are prepared by dissolving sugar 1750 in 1,000 parts of the clarified juice.

Jarabe de Narceina, Syrupus cum Narceinâ—Narceine 1, water (containing 0·6 gm. of hydrochloric acid sp. gr. 1·16) 100, distilled water 250, sugar 650; dissolve.

Jarabe depurativo de Chavert, Syrupus depurans ex Chavert.—Boil sarsaparilla 180 and China root 60 with water 4,000, suspending in the liquid powdered black antimony 60, enclosed in a piece of linen; when the liquid has been reduced to 1,500 macerate it with orris root 60, round aristolochia root 60 and senna 120, strain, add sugar 2,000 and honey 2,000, form a syrup and mix with the tincture prepared from jalap 30, sassafras bark 60 and alcohol (60 per cent.) 375.

Leche para niños, Potio Rosarum composita.—Rose water 120, magnesia 2, powdered soap 0·006, syrup of orange peel 15; mix. As an antacid for babies in doses of a spoonful.

Leche virginal, Tinctura de Benzoino composita.—Benzoin 120, Ceylon cinnamon 30, cloves 30, mace 30, alcohol (80 per cent.) 2,000; macerate for 8 days, add balsam of Peru 30, again macerate for 8 days

and filter. Used as a cosmetic, a little of the tincture added to water forming a milky mixture.

The fixed oil directed for the various liniments is sesame oil. The following may be mentioned:

Linimento de Cloral, Linimentum cum Chloralo.—Powdered chloral hydrate 6, sesame oil 30; dissolve with trituration and by the aid of a moderate heat.

Linimento de Jabon (de Goulard), Linimentum Saponis ex Goulard.—White animal soap 500, water 2,000; dissolve by means of a gentle heat, stir well while cooling and incorporate with it a mixture made of sesame oil 250 and subacetate of lead 120.

Oleosacaruros, Oleosaccharureta, are made from 1 part of volatile oil and 72 parts of sugar.

Opiata de Copaiba compuesta, Opiatum Copaibæ compositum.—Mix equal weights of copaiba, powdered catechu and powdered cubeb.

Pastillas de Cuautecomate, Pastilli de fructibus Crescentiæ alatæ.—Aqueous extract of the pulp of Crescentia alata 50, gum arabic 50, sugar 200. Each lozenge is to weigh 1 gm.

Pildoras de Boncio, Pilulæ ex Bontius.—Barbadoes aloes, gamboge and ammoniac, of each 10 gm., white vinegar 60 gm.; heat gently, strain the liquid, evaporate to a pilular consistence and form into 150 pills.

Pildoras pacíficas, Pilulæ Opii compositæ s. pacificæ.—Powdered opium 30, nutmeg 6, saffron 6, benzoic acid 4, oil of fennel 0·006, oil of nutmeg 0·006, honey 20; make into 1,344 pills, each of which contains approximately 0·022 gm. of opium.

Polvo de contrayerba compuesto, Pulvis Dorsteniæ compositus.—Powdered contrayerva root 60, root of Dictamnusalbus 60, mistletoe 60, calcium phosphate 104, hydrated ferric oxide 3; mix. Recommended in various nervous affections; dose 0·6 to 4·0 gm.

Polvo de Jalapa compuesto, Pulvis Jalapæ compositus.—Jalap root 34, jalap resin 4, scammony 4, potassium nitrate 12, potassium sulphate 12, oil of anise 0·013; mix. Dose 1 to 4 gm.

Polvo de Rosa compuesto, Pulvis Rosæ compositus.—Rose petals 125, linaloe 45, cinnamon 15, cloves 15; mix. Used as a tonic application to ulcers.

Polvo dentrífico de Comoto, Dentifricium ex Comoto.—Cream of tartar 25, cochineal 50; mix the powders, moisten the mixture with

sufficient water to form a paste, dry, reduce to a fine powder and mix with powdered cloves 6 and calcium phosphate 150.

Polvo galactóforo, Pulvis Foeniculi compositus.—Powdered fennel 125, sugar 125, calcium phosphate 375, origanum 125, hydrated oxide of iron 5; mix. Dose 4 to 15 gm.

Pomada de Cloral, Pomatum cum Chloralo.—Chloral hydrate 6, lard 30; dissolve in a wide mouth vial with the aid of heat.

Pomada de Sulfato de quinina, Pomatum cum Sulfate quinico.—Quinine sulphate 3, tartaric acid 2, water 4; dissolve and mix with benzoinated lard 30.

Pomada de Toronjil, Pomatum cum oleo volatile Cedronellæ mexicanæ.—Oil of cedronella 15, lard 500. As a cosmetic for the hair.

DISINFECTANTS.

It will be seen by the correspondence of the *Medical News*, of Philadelphia, of June 20th, page 704, that the International Sanitary Conference at Rome, Italy, has decided to confine itself to the subject of the prevention of cholera until that be disposed of, and then, if there be time and a disposition to discuss them, other diseases may be taken up.

A committee of seven was appointed to consider the subject of disinfection, with Dr. Sternberg, the U. S. delegate, named first; but upon his proposition, Dr. Koch was made Chairman.

After several protracted sessions the committee made a long report, which was adopted by the Conference by a vote of 20 to 1.

The Conference, therefore, recommends, as means of disinfection against cholera:

1. Steam at a temperature of 100° C. (212° F.).
2. Carbolic acid. Chloride of lime.
3. Aëration.

Carbolic acid and chloride of lime are to be used in aqueous solution:

Weak solutions.—Carbolic acid, 2 per cent.; chloride of lime, 1 per cent.
Strong solutions.—Carbolic acid, 5 per cent.; chloride of lime, 4 per cent.

These means of disinfection will be applied as follows:

I. For the disinfection of person the weak solutions should be employed.
II. For the disinfection of clothing, bedding (*des linges, des habits, des couvertures*) and other articles of this kind:

(*a*) destruction; (*b*) steam passed through the articles for one hour; (*c*) boiling for thirty minutes; (*d*) immersion for twenty-four hours in one of the weak disinfecting solutions; (*e*) aëration for three or four weeks, but only in case the other means recommended are inapplicable.

Articles of leather, such as trunks, boots, etc., should be either destroyed or washed several times with one of the weak disinfecting solutions.

III. Vomited matters and the dejections of the sick should be mixed with one of the strong disinfecting solutions, in quantity at least equal to the amount of material to be disinfected. Linen, clothing, bedding, etc., recently soiled by the dejections of the sick, which cannot be immediately subjected to the action of steam, should be at once immersed in one of the strong disinfecting solutions, and left for four hours.

IV. The dead should be enveloped in a sheet saturated with one of the strong disinfecting solutions, without previous washing of the body, and at once placed in a coffin.

V. Disinfection of merchandise and of the mails is unnecessary (steam under pressure is the only reliable agent for the disinfection of rags—*les chiffons en gros*).

VI. When cases of cholera occur upon a vessel at sea, the locality where the case occurs should be disinfected. The floors and walls of the cabin, or other locality, should be washed at least twice with one of the weak disinfecting solutions, and then exposed freely to fresh air.

In the case of objects of considerable value, which have not been in immediate contact with the sick, and which would be seriously injured by a rigorous disinfection, the physician on board may determine what measures are necessary to protect the sanitary interests of the vessel.

The bilge-water should be pumped out, and replaced by sea-water, at least twice at each disinfection of a vessel.

The *closets* should be well washed with one of the strong disinfecting solutions at least twice a day.

VII. If the drinking-water is open to suspicion, it should be boiled before it is used, and the boiling should be repeated, if it is not used, within twenty-four hours.

All suspected food should be destroyed, or at least recently cooked.

VIII. Hospitals should be disinfected by washing the floors and walls with one of the weak disinfecting solutions, by a subsequent free ventilation and cleansing, and finally by repainting. The wards to be disinfected should, as far as possible, be isolated from those in use.

The latrines should be disinfected at least twice a day by pouring into them the strong disinfecting solutions in quantity at least equal to the amount of the dejections received since the last disinfection.

IX. The clothing worn by physicians and attendants should remain in the hospital, and should be regularly disinfected.

Physicians and attendants should use the weak disinfecting solutions for washing their hands, etc.

It will be noticed by this quotation from the correspondent of the *Medical News*, that so far as cholera is concerned, the Conference does

not agree with the conclusions of Dr. Sternberg's committee here, in omitting carbolic acid as not being a true disinfectant, but, on the contrary, places it first in rank, as taking precedence in value over chlorinated lime, and this appears to have been done upon the experience of Dr. Koch. This delegate objected to recommending corrosive sublimate, for two reasons: First, because it was too dangerous for general use; and, second, "because, its disinfecting action was, to some extent, interfered with by the fact that it entered into combination with albuminous material, and thus failed to come in contact with germs enclosed in albuminous masses."

Dr. Koch's first objection appears to be more sound than his second one, since it is highly probable that all germicides act by combination with the albuminous material of the infective matter.

Only two chemical disinfectants were recommended, not because there were none others trustworthy, but because it was sufficient to recommend two of those most generally useful. Indeed, Dr. Koch seems to have considered carbolic acid alone sufficient, but in deference to the work of the Committee on Disinfectants of The American Public Health Association, made no objection to including chloride of lime with carbolic acid in the recommendation, upon the representations of Dr. Sternberg.

The aqueous solutions of carbolic acid here recommended are very easily made from either the officinal crystallized carbolic acid, or from good impure carbolic acid or coal-tar creasote. When made from the latter they will be better disinfectants, but the odor is much more disagreeable.

To make the solutions from the crystallized acid, or Phenol, the one pound bottle of crystals should be melted by setting it in warm water. A fluidounce of water should then be added and the contents be shaken. This will serve to keep it fluid. Then the solution is made as wanted. For the 2 p.c. solution 2 measures to 98 measures of water will be sufficiently accurate, and for the 5 p.c. solution 5 measures to 95 of warm water. The solution of this proportion in cold water is a little tedious, but by the use of warm water it dissolves at once.

For continuous use about infectious cases it is only necessary to keep the strong solution, and a half gallon bottle can be conveniently made at a time by putting about $3\frac{1}{4}$ fluidounces of the fluid acid in the bottle, filling with warm water, and shaking well. This may be repeated as

often as required, and a pound bottle of crystals, or of the impure acid will thus make about 2¼ gallons of the strong solution.

When the weak solution is wanted it may be made from the strong by adding to each measure of it 1½ measures of water. That is, one bottle of the strong solution will make two and a half bottles of the weak.

This weak solution is quite benumbing to the skin if applied for any considerable length of time.—*Ephemeris*, July, 1885, p. 829.

NOTE ON CAMPHOR MOTIONS.

By P. Casamajor.

On the 4th of October, 1877, I read a paper "On the Motions of Camphor on the Surface of Water," before the American Chemical Society, in which I described experiments, which had led me to the conclusion that these motions were due to electricity.

The extraordinary motions which give an appearance of life to pieces of camphor, swimming on the surface of water, are not to be seen at all times. Very often camphor will remain motionless, while at other times the pieces gyrate with great animation. One of the earliest observers of these singular motions, Romien (1748), came to the conclusion that they were due to electricity, while subsequent investigators, among whom may be counted the great Volta, have generally decided that there is no connection between electricity and the motion of camphor on water.

I was led to believe that camphor motions were due to electricity by the results of experiments, of which I will give a brief account.

When pieces of camphor are thrown on water, they may remain torpid or they may gyrate with every appearance of life. In the latter case, the motions may be instantly arrested by dipping a finger in the water on which camphor moves. If we have pieces of camphor lying quietly on water, they may be made to move by dipping into the water a rod of either glass, sealing wax or vulcanite, electrified by friction. After every immersion the glass is to be dried by wiping with a dry cloth or a piece of bibulous paper; and, before every immersion, the rod is electrified by rubbing with a piece of silk or flannel. After one or more immersions of the electrified rod, the camphor motions invariably start, and by a few additional immersions they increase in

intensity. The fact that these motions could be started by means of an electrified rod was a new one. Those who had decided that camphor motions were not due to electricity were not acquainted with it, and I was led to believe by this fact, and by others which I gave at the time, that camphor motions were electrical phenomena. There was, however, something unsatisfactory in this method of applying electricity to the water on which pieces of camphor floated, but, at that time, no other method occurred to me. Afterwards the whole subject slipped from my mind, but, quite recently, the following experiment has suggested itself, which seems to show that camphor motions are not due to the state of electrical tension of the liquid on which pieces of camphor float.

The experiment was performed in a glass dish about two inches deep, and of five inches diameter. This was filled with water up to within an inch of the top. The bottom of the dish and the sides, up to within an inch of the top, were covered in tin foil. A metallic wire dipped in the water of the dish, with one end out of the water, but having no connections with the outside lining of tin foil.

This glass dish was equivalent of a Leyden jar, which could be charged with electricity from the plate of an electrophorus by touching the wire dipping into the water with this plate, laying a finger at the same time on the outside armature.

A few pieces of camphor were placed upon the water in the dish, and these were reduced to immobility by dipping a finger in the water. After this the water in the dish was charged with electricity by repeatedly placing the plate of an electrophorus in contract with the wire dipping into the water, while the outside armature was touched with a finger.

There was no effect produced on the pieces of camphor floating on the water of the dish. These remained motionless, not exhibiting the slightest tremor. There could be no doubt that the water surface was in a greater state of electrical tension in this experiment than when the water is electrified by dipping an excited rod in it, for, by placing one hand on the outside armature of the dish, and slowly approaching the water surface with a finger of the other hand, a perceptible spark was obtained.

There seems to be a discrepancy between the results to be obtained in these two classes of experiments.

By dipping an electrified rod successively in water the camphor motions always take place, while, when we electrify by applying the

plate of an electrophorus to the water in the dish, as described, not the least tremor can be perceived. As these results were obtained over and over again, there cannot be any doubt as to the difference of the effects in the two modes of operating.

The conclusion that may be drawn is that camphor motions are not caused by electricity. In the case of an electrified rod, dipped successively in water, I am inclined to the opinion that electricity acts indirectly by removing physical impurities from the surface of the water, as shown by the following experiment:

Take a glass of water, and on its surface place a few pieces of camphor. If these are inclined to move, they may be stopped by dipping a finger in the water. Then blow a cloud of lycopodium powder over the surface of the water, so as to cover this surface uniformly with the powder. If now an electrified rod is dipped repeatedly in the water, wiping it dry after every immersion, and, rubbing it with a piece of flannel before dipping in the water again, the result will be that the pieces of camphor will move as if gifted with life. It will be noticed at the same time that the surface of the water will be almost entirely free from lycopodium, as the powder has been gradually removed by each successive immersion of the electrified rod, which attracts lycopodium like all other light bodies. If now we suppose that films of oily matter are removed in the same way by an electrified rod, we may conceive how electricity can act indirectly in removing impurities from the surface of the water.

There would remain to explain why films of oily matter or other impurities act as a check on camphor motions while a physically clean water surface is a favorable condition in producing these motions. Towards the solution of these questions I will venture the following explanation, which may serve as the base of further researches.

It is a well ascertained fact relating to camphor motions, that when these motions take place the camphor dissolves in water more quickly than when the camphor is at rest. I think that a connection exists between camphor motions and the three following facts: 1st, that camphor dissolves in water quite easily at times; 2d, that its density allows it to float on water; and 3d, that the solution has a density slightly different from that of water. I am not prepared at present to develop these ideas, which would require further experiments to establish.

I will confine myself to the well ascertained fact that a piece of camphor wears away much faster when in motion than when at rest.

This being established, it appears more than probable that if a piece of camphor is perfectly free from oily matter it will dissolve in water more readily than if protected by a greasy film. The slightest film of this nature, in contact with camphor, becomes a saturated oily solution of camphor, and if any excess exists, over what will cover the camphor, the film will extend over the surface of the water.

When things are in this condition, if an electrified rod is dipped several times in the water, every immersion will remove a portion of oily film from the surface, until finally the film on each piece of camphor becomes so thin that the water reaches the pieces of camphor, and these immediately becomes gifted with motion.—*Jour. Am. Chem. Soc.*, 1885, p. 13.

THE CULTIVATION OF THE STAR ANISE TREE AND THE PREPARATION OF THE OIL IN ANNAM.[1]

The star anise, or badiane, called by the Annamites "bac-giai-qua" or "qua-hoi," is the fruit of a tall tree that is cultivated in the mountainous regions of Annam, upon the slopes covered with earth. The natives affirm that it is nowhere met with in the mountains in the wild state. At the village of Na-nam, in the mandarin route, twelve kilometres from Lang-son it has been ascertained by inspection that the seedlings and young trees are the objects of attention by the Annamites, who surround them with bamboos; also that the larger trees are planted in a regular manner.

The "qua-hoi," the trunk of which is as straight as that of the poplar, bears branches resembling those of the eucalyptus. It is met with everywhere in the mountains around Ha-long, Dong-dang, Vanquan and Pho-vi, which are the principal centres of culture and production. The oil is prepared at Lang-son, Ki-lun, Dong-dang and Ha-long, industrial centres of manufacture.

During ten years, the "bac-giai-qua" grows very slowly. At the end of that time it attains a height of about three metres. Up to that time it produces very little, scarcely yielding more than one or two Annamite kilograms (1,200 grams). From its tenth year its size and its production increase rapidly up to thirty or forty years, at which age the tree commences to fall off and die. A tree of ten to fifteen centimetres diameter yields an average of twenty Annamite kilograms

[1] From the *Petit Moniteur de la Pharmacie*, July.

of fruit; a full-sized tree, with a diameter of forty to fifty centimetres, gives two hundred kilograms. The fruit is sold whilst green to the manufacturers of the oil at the price of four tiens the Annamite kilogram.

The Annamites sow the seed of the "bac-giai-qua" in manured soil. The young plants issue from the soil after about twenty or thirty days, and in two or three years they attain a height of twenty or thirty centimetres. They are then transplanted and pricked out at a distance of five or six metres from each other, but always upon the slopes free from stones and never at the bottom of a ravine.

The tree bears a small yellow and white flower in the first or second month of the Annamite year and fruit in the sixth to the ninth month, but it yields fruit only every two years. The collection of the fruit is made by hand. The cultivation is not subject to any impost. The fruit is purchased either directly in the villages, or in the country markets, at a half ligature the Annamite kilogram.

The manufacture of the oil was subject to a tax that was collected by the "tuam-phu," who was at the same time the farmer of star anise for the province of Langson. The tax varied according to the extent of the operation; it was three ligatures for a large distillation of ten kilograms of fruit, and one ligature and a half for a distillation of three or four kilograms. This tax was paid for every distillation and authority to distil had to be renewed each time. The only existing apparatus is of the dimensions suited for one or other of these two quantities.

The oil is the product of a distillation conducted as follows: Into a first recipient, which is an iron pan about seventy-five centimetres in diameter, are placed ten kilograms of star anise and water, which quantity nearly fills it. A second iron pan, pierced with a circular opening about twenty-five to thirty centimetres in circumference, is placed upon the first, bottom upwards, so as to form a cover. Over the opening in this pan is placed an earthen vessel, having three small orifices in the lower part, which allow the access of the vapor into this vessel. These orifices are covered, on the inside of the recipient, by small ear-shaped hoods that have for their object to throw the vapor upon the side of the vessel. Lastly, this earthen vessel is covered by an iron pan which performs the part of refrigerant, and into which a continuous current of cold water is made to pass by means of a bamboo pipe, from a vat placed near the apparatus. The joints of the first

two iron pans are luted with a mastic, that of the earthen vessel with the refrigerant by means of rag bandages. The vapor reaching the earthen vessel is condensed when it strikes upon the bottom of the pan holding the cold water, and falls into a small circular trough running round the bottom of the vessel, from which it escapes through a small pipe. The small pipe opens out into a bamboo which conducts the products of distillation into a closed tinned vessel full of water, where the oil, rising to the top, drives out a corresponding quantity of water.

A distillation lasts two days and the yield from ten Annamite kilograms of star anise is two and a half decilitres of oil. The residue of the distillation is thrown away. A single manufacturer, and there are many, would distil 150 to 180 Annamite kilograms of oil yearly.

The oil is enclosed in tinned recipients and sold in China at Luong-chau. Before the French occupation of Hanoi and Bac-ninh, a part of the products went by these two places into Tonquin, but since then the Chinese dealers have remained the masters of the market.—*Phar. Jour. and Trans.*, July 25, 1885, p. 91.

PRICKLY PEAR IN AMERICA.

In some recently published Consular reports of the United States the following interesting paragraph on the nopal, or prickly pear (*Opuntia cochinillifera*) occurs: "The plant abounds in the whole territory of Mexico, Texas, New Mexico, Arizona, and California, and extends much further north. It has flat oval leaves, about six inches long and nearly half an inch thick, covered by long sharp thorns, and bears a fruit of a purple color resembling a pear, filled with numerous small seeds. The plant grows from three to six feet high. Its fruit is eaten freely by cattle, and the leaves, after having been burnt in a fire to get rid of the thorns, are thrown by the cartmen in place of fodder to their oxen by means of a long sharp-pointed stick, especially when on a road where there is no grass. It also makes an excellent hedge, and once planted will last for ever. There is another species of nopal called *nopal de castilla*, which has no thorns, and which is cultivated for the sake of its fruit. This nopal has much larger leaves than the wild species, and grows to the height of ten and twenty feet, and the fruit is much larger. Of this species there are a great many

different kinds, each having its distinct name. They are of different colors—green, red, yellow, white, and purple. The fruit is delicious, and in the interior of Mexico forms one of the principal means of sustenance for the inhabitants. From the purple tuna a liquid is made called *colonche*, and a sort of sweet cheese (*queso de tuna*). There is a small red tuna growing wild in the mountains near to Zacatecas, called cardona, which is highly prized on account of its fine flavor and digestible qualities, and several cartloads of which are sold daily in Zacatecas. They are sold at six cents for four dozen. Besides serving for food for men and beasts, its leaves form the food of the cochineal insect."—*Phar. Jour. and Trans.*, June 27, 1885; from *The Gardener's Chronicle*, June 20.

NOTE BY THE EDITOR.—The Mexican Pharmacopœia describes a product of these plants under the designation of *goma de nopal*, also improperly called tragacanto del país. It is produced by different Mexican species of Opuntia, such as O. Tuna, *Miller*, O. rosea, *De Cand.*, O. Hernandezii, *De C.*, and others, the plants being called nochtli in Mexico, pari in Tarasco, raquette by the French and nopal by the English and Spaniards. The gum is in vermicular or roundish pieces, horn-like, yellowish white, translucent or opaque and insipid. Immersed in water it swells, becomes white, does not form a mucilage and leaves a farinaceous residue. With iodine it becomes blackish blue. The microscope reveals groups of thin needle-shaped crystals of calcium oxalate, by the presence of which this gum is easily recognized if used for adulterating tragacanth. It is employed for similar purposes as the latter.

Nopalillo, Opuntia Nopalillo, *Karwins*, is a Mexican cactus, of which the root is employed in the form of infusion, in dysentery, diarrhœa, hæmoptysis and metrorrhagia.

REMEDIES FOR CORNS.—For corns oleate of copper spread as a plaster is recommended in "St. Louis Med. Jour." This has probably a similar effect as the ceratum æruginis of German pharmacy which contains 5 per cent. of verdigris, while some old formulas directed as high as 15 per cent. See also May number p. 241.

LOTION FOR FŒTID PERSPIRATION OF THE FEET.—Martin ("Bull. gén. de thérap.") recommends the following solution:

Permanganate of potassium	15 grains.
Thymol	30 "
Distilled water	30 ounces.

Inner soles made of filtering-paper, cotton, or some like material, are to be moistened with the solution, and new ones should be used every morning.—*N. Y. Med. Jour.*, May 23, 1885.

DETECTION OF COLOCYNTHEIN, ELATERIN, AND BRYONIN.

By E. Johannson.

Colocynthin when heated with dilute sulphuric acid yields colocynthein, elaterin and bryonin.

Colocynthin is soluble in water and alcohol; it gives an orange color changing to red with concentrated sulphuric acid, a cherry-red coloration with sulphuric acid containing molybdic acid, a blood-red coloration turning blue at the edge with sulphuric and vanadic acids, a yellow coloration with alcohol and sulphuric acid, distinguishing it from solanine and solanidine, and a yellow coloration with sulphuric and selenic acids; moistened with phenol and a drop of sulphuric acid, it gives a blood-red coloration changing to orange.

Colocynthein is not as soluble in water as colocynthin, it is only sparingly soluble in light petroleum, but easily in benzene. With molybdic and sulphuric acids, it remains at first unchanged, but finally becomes a dirty cherry-red. With vanadic and sulphuric acids, its reactions resemble those of colocynthin. Colocynthin and colocynthein may be separated by shaking the acid solution with benzene which dissolves the colocynthein, and afterwards with ethyl acetate which dissolves the colocynthin.

Elaterin is insoluble in water; it is sparingly soluble in cold, but easily in boiling alcohol; it crystallizes in colorless, shining, six-sided plates. With concentrated sulphuric acid, it gives a pale yellow coloration, becoming red at the edges after some time, and finally cherry-red. Molybdic and sulphuric acids give a fugitive green color. Phenol and sulphuric acid give a momentary red coloration. Vanadic and sulphuric acids give a fine blue, changing to a bright green color. Selenic and sulphuric acids give a red color not so intense as that produced by concentrated sulphuric acid alone. Alcohol and sulphuric acid give on warming only a faint yellow color. When evaporated on the water-bath, and then treated with sulphuric acid, a violet-red coloration is obtained. The elaterin reactions are slow, and with the exception of the characteristic vanadic and sulphuric acids test, unsatisfactory.

Bryonin, in its reactions, resembles colocynthin and elaterin, and is readily soluble in water and alcohol. Selenic and sulphuric acids give a dirty cherry-red, and vanadic and sulphuric acids a blue-violet color.—*Jour. Chem. Soc.*, May, 1885, p. 606; *Zeit. Anal. Chem.*, vol. 24, 154–157.

DETECTION OF BERBERINE, HYDRASTINE AND OXYACANTHINE.

By L. v. Hirschhausen.

Berberine gives with phosphomolybdic or phosphotungstic acid a yellow amorphous precipitate, with potassio-mercuric iodide the precipitate is greenish-yellow, with potassio-bismuthic iodide orange-red, with potassio-cadmium iodide bright yellow. The precipitates formed with platinic chloride, auric chloride, mercuric chloride, picric acid, and potassic bromide are all of a yellow color, and are easily obtained with 0·01 mgrm. of the alkaloid. Potassium dichromate gives a yellow amorphous flocculent precipitate with 0·02 mgrm. An alcoholic solution containing 0·01 mgrm. berberine sulphate, gives with a solution of iodine in potassium iodide an immediate crystalline precipitate of a green color if the reagent is added gradually. Potassium ferrocyanide precipitates a salt of the alkaloid in yellow needles. Concentrated pure sulphuric acid, when added to a small quantity of the dry salt, gives a yellow coloration darkening to olive-green and finally disappearing. Molybdic and sulphuric acids give an immediate yellow color, changing through dark-brown to violet-brown. Vanadic and sulphuric acids give a fine violet, and selenic and sulphuric acids a bright yellow color with 0·01 mgrm. of the salt. Chlorine water gives a blood-red coloration with 1 mgrm. of berberine sulphate, but if the salt be first dissolved in a few drops of a 33 per cent. solution of hydrochloric acid, the color is produced with 0·01 mgrm. of the salt. A crystal of potassic nitrate and the dry salt when moistened with concentrated sulphuric acid, give a brown-red passing to a fine orange-yellow. If potassium dichromate be substituted for the nitrate, the color is more of a violet tint at first, and finally assumes a brownish-yellow hue. Phosphoric acid gives a yellow color. With sugar and sulphuric acid, a yellow coloration, changing through green to black is produced. Bromine-water precipitates an orange-yellow bromide which rapidly loses its color. Berberine is only sparingly soluble in chloroform, and not at all in petroleum, ether, or benzene.

Hydrastine gives with phosphomolybdic acid a bright lemon-yellow precipitate; with phosphotungstic acid, potassio-cadmium iodide, or potassio-mercuric iodide, white precipitates; and with potassio-bismuthic iodide and potassium dichromate, orange precipitates. With 0·1 mgrm.

of the alkaloid a solution of iodo-potassium iodide gives a deep brown flocculent precipitate. Vanadio-sulphuric acid gives a beautiful rose-red color which slowly disappears. A crystal of potassium dichromate and sulphuric acid give a golden-yellow color, changing to brown and green. Chlorine-water gives no coloration, even in the presence of hydrochloric acid. Bromine-water added to a solution of hydrastine in strong sulphuric acid gives an immediate orange precipitate. Hydrastine is insoluble in light petroleum, but the greater part dissolves in benzene.

Oxyacanthine gives white precipitates with potassio-mercuric iodide, tannic acid, and potassio-cadmium iodide; orange precipitates with picric acid or potassio-bismuthic iodide, and a deep brown precipitate with iodo-potassium iodide. Molybdic and sulphuric acids give an immediate violet coloration, changing to yellowish-green at the edges.

Oxyacanthine is not extracted from acid solutions by light petroleum or benzene, and only sparingly by chloroform.—*Jour. Chem. Soc.*, May, 1885, p. 606; *Zeit. Anal. Chem.*, vol. 24, 157–163.

DETECTION OF SANGUINARINE AND CHELIDONINE.

By A. v. Kügelgen.

Concentrated sulphuric acid gives with 0·1 mgrm. of sanguinarine a blue-violet coloration, changing after several hours to a dirty green. Sulphuric and molybdic acids give a violet color with a tinge of red resembling, but somewhat lighter than, the corresponding morphine reaction; after an hour, the color becomes brown and eventually green. Vanadium sulphate gives a bluish-violet color, which turns bluish-black on standing. Selenic and sulphuric acids do not give so intense a violet color as is produced when sulphuric acid alone is added. 0·02 mgrm. of the alkaloid in a few drops of dilute sulphuric acid (1 of acid to 50 of water) gives precipitates with tannin, bromo-potassium bromide, phosphotungstic acid, iodo-potassium iodide, and phosphomolybdic acid; and a turbidity with picric acid, potassio-mercuric iodide, potassio-cadmium iodide, potassio-bismuthic iodide, and gold chloride. Sanguinarine is not extracted from its acid solutions by light petroleum, and only sparingly by benzene and chloroform.

Chelidonine.—0·5 mgrm. of this alkaloid gives with sulphuric acid at first a pale-green color, changing to brown edged with red or violet. The violet color is only observed in strong solutions. Sulphuric and

molybdic acids give a green color, changing to blue, brown and black. Selenic and sulphuric acids, sfter a time, give a pale-green, which changes on warming, to a red-brown. Sulphuric acid and potassium dichromate give similar reactions. Vanadic sulphate gives an intense emerald-green coloration, which turns to a bright blue, changing to a dark green. Potassium nitrate and sulphuric acid give a green, changing to a blue, and finally becomes fawn-colored (in small quantities, the color is steel-blue). Bromine and sulphuric acid give a red-brown with green streaks. Sugar and sulphuric acid give a rose-violet color, changing to cherry-red and blue-violet. Chelidonine is not extracted from an acid solution by light petroleum, only slightly by benzene, but better by chloroform.—*Jour. Chem. Soc.*, May, 1885, p. 608; *Zeit. Anal. Chem.*, vol. 24, 165–166.

NITROGENOUS SUBSTANCES INSOLUBLE IN GASTRIC JUICE.

By A. Stutzer.

In almost all vegetables there are found three groups of nitrogenous substances: one, soluble in water, and represented by asparagin; the second, comprising albumin, dissolved by the hydrochloric acid pepsin of the stomach, and chemically distinguished from amides by forming *insoluble* compounds with copper hydroxide in neutral solutions; the third group is composed of all those nitrogenous substances which are not soluble in water or in acid pepsin. The author undertook the examination of the latter group, and as the results of experiments on the living animal would probably be rendered doubtful by the presence of mucin and other nitrogenous matters in the excreta, due to the transformation of tissue, he decided on employing artificial digestion. The substance used for preliminary experiments, was commercial cocoanut cake, largely used as cattle fodder. This was treated with acid pepsin solution, and afterwards with variously prepared extracts, of pancreas, in order to remove the nitrogen as much as possible. The results showed that the alkaline pancreatic extract had less effect on protein matters than the acid pepsin, although in some cases the results were very close. The examination of other animal secretions suggested itself to the author. Hoppe-Seyler denies the power of intestinal secretions to dissolve albumin, and even should it be proved here-

after that there are ferments in the organism which have the power of digesting albumin, it must be remembered that such ferments have a less powerful action than either the gastric or pancreatic juices, and that food materials which are unaffected by these two secretions are probably valueless as nourishment.

To prepare the extract of pancreas, the author took the pancreas of an ox (400 grams), freed as much as possible from fat, exposed it freely to the air for 24 hours, rubbed it down finely with sand, covered it with dilute glycerol (1 litre glycerol and 1 litre water), and after 4—6 days pressed and filtered. When used, this extract must always be made alkaline by the addition of soda.

Some of the experiments were made to determine if soda alone was able to dissolve nitrogenous compounds. Two samples of finely ground barley straw were digested with artificial gastric juice, after which there remained in the undissolved portion a mean of 0·206 per cent. nitrogen. After further digestion with ½ per cent. soda solution at 40° for several hours there remained nitrogen undissolved 0·105 per cent. Experiments with leaves of grass and palm-nut kernels yielded similar re-results. Whether the soda acts simply as a solvent or causes a true decomposition of the substances acted on, is a question the author cannot answer.

A quantity of palm-nut cake was first treated with freshly prepared acid pepsin solution, after which it contained an average of 0·461 per cent. nitrogen. Portions were then treated with 100 cc. of pancreas extract to 2 grams of residue (a proportion preserved in all the experiments), ½ and 1 per cent. soda solutions being used to give an alkaline reaction. The results were negative, the differences being within the limits of experimental error. Other observations convince the author that ½ to 1 per cent. soda solution without any ferment act as solvents equally well as when pancreas ferment is present; this he explains by the organic matter from the pancreatic glands diluting the soda and gradually diminishing its solvent powers.

A mixture of lucerne and grass hay which left a residue after digestion of 0·293 per cent. nitrogen, after treatment with pancreas solution containing 1 per cent. soda, left 0·213 per cent.; with ½ per cent. soda, 0·271 per cent. In the former case 27 per cent., in the latter but 7 per cent. of the difficultly soluble nitrogen was dissolved. Similar experiments with the following substances show the percentages dissolved by the pancreas solutions:

Cocoa powder, 26 per cent.; dry flesh meal, 24 per cent.; ship's biscuits, 27 per cent.—*Jour. Chem. Soc.*, July, 1885, p. 827; *Zeit. physiol. Chem.*, vol. 9, 211–221.

GLEANINGS IN MATERIA MEDICA.

By the Editor.

Convolvulin and Jalapin. These resins after having been taken internally, could not be detected by Bernatzic (1862) in the urine, and in the fæces only after very large doses had been given. Köhler and Zwicke (1869) succeeded in proving their presence in the contents of the stomach and intestines. In a serious of experiments with cats, made in Dorpat by Dr. J. Müller (Thesis, 1885) the compounds named or their derivatives were shown to be absent from the fæces, urine, kidneys and bladder; the reactions were quite distinct with blood, stomach, jejunum and ileum, faint with duodenum and the large intestines, and very faint with heart, lungs and spleen. A cat having been killed five hours after taking 0·5 gm. jalapin showed a relatively distinct reaction in the blood; but the different organs gave either a very faint reaction or none.

The process for separating the resins was selected after a series of experiments as follows: the mass was macerated for a day with 3 times its weight of 96 per cent. alcohol, the filtrate concentrated, acidulated, agitated with petroleum benzin for the removal of impurities, and afterwards with chloroform, on the evaporation of which the resin was left behind. Blood treated in the same manner, leaves a residue giving the same reaction, but after treating this residue with absolute alcohol, filtering and evaporating, the residue left from blood does not show the reaction, except in the presence of the resins named. The test used for the color reaction was concentrated sulphuric acid, about 10 drops, which dissolves the resins; the solutions on the careful addition of water show a red color within a few minutes, which, however disappears rapidly; but if the solution be allowed to absorb moisture from the atmosphere, the reaction takes place slowly in about an hour and continues for a longer time.

Analysis of Brazilian Coffee. Fifteen authentic samples were analyzed in Dragendorff's laboratory. The moisture was determined from the coarse powder at 105° C.; all the other determinations were calculated for the dry substance. The ash was obtained from the unbroken seeds; for estimating the phosphoric acid, the ash was dissolved in warm diluted hydrochloric acid, the solution mixed with sodium acetate, the ferric phosphate filtered off, and the phosphoric acid in the

filtrate determined by titration with uranium acetate. The fat was extracted from the fine powder by petroleum benzin, and this exhausted powder used for determining the caffeine, which had to be freed from traces of fat by benzin. Nitrogen was estimated by the method of Dumas, as modified by Zullkowsky and Arzberger; after deducting the nitrogen of the caffeine, the remainder multiplied by 6, gave the albuminoids. For the determination of tannin a modification of Löwenthal's method was used and the permanganate solution standardized with pure coffeotannic acid. The cellulose was found according to F. Schulze by successive treatment with nitric acid sp. gr. 1·16, water, diluted ammonia, alcohol and ether. The following results were obtained:

	Moisture.	Ash.	Phosphoric Acid.	Nitrogen, total.	Albuminoids.	Caffeine.	Fixed Oil.	Tannin.	Cellulose.
Mean.....	11·16	3·54	·402	4·14	22·95	1·09	13·50	6·50	11·59
Highest.....	12·72	4·24	·490	4·46	24·78	1·22	16·48	7·60	13·03
Lowest.....	8·66	2·92	·280	3·63	19·86	0·99	11·26	5·46	8·68

—*Phar. Zeitschr. Russl.*, 1885.

Cupreol and Cinchol are isomeric compounds of the formula $C_{20}H_{34}O$, which were isolated by O. Hesse, the former from cuprea bark, the latter from different cinchona barks; in addition to cinchol the bark of C. Ledgeriana contains also the isomeric *quebrachol*. These three compounds as well as *phytosterin*, isolated by Hesse from Calabar beans and from peas, belong to the class of cholesterins. The above new compounds were prepared from the coarsely powdered barks (20 to 25 kilos being used) by exhausting with petroleum benzin, treating the extract with boiling alcohol, cooling to separate greenish resin, concentrating between 40° and 60° C. until resin began to separate, then evaporating the clear liquid spontaneously, and separating the oily matter by means of bibulous paper or by saponification with potassa. From 0·002 to 0·003 per cent. of cupreol was obtained from cuprea bark, and it was also found besides cinchol, in the bark of Cinch. officinalis and C. Calisaya var. Schuhkrafft.

Cupreol crystallizes from alcohol or glacial acetic acid in colorless

satiny scales, which on exposure become dull glossy. It is insoluble in water and alkalies, freely soluble in chloroform, ether and hot alcohol, and less freely soluble in petroleum benzin and cold alcohol. Its chloroformic solution like the solutions of quebrachol, cholesterin and phytosterin, on being agitated with sulphuric acid sp. gr. 1·76 acquires a blood red color. The scales contain 5·93 per cent. (1 mol.) of water, which they begin to lose at 15° C. Cupreol melts at 140° C., volatilizes at a higher temperature, crystallizes from petroleum benzin or ether in anhydrous long needles, and when heated with acetic or propionic anhydrides, yields the corresponding crystalline esters.

Cinchol crystallizes with 1 H_2O in needle-shaped scales or in broad lamina, melts at 139° C., is somewhat less strongly lævogyrate, and otherwise resembles cupreol.

The author examined also Kerner's cinchocerotin (see "Am. Jour. Phar.," 1883, p. 357), from which cinchol and acetyl cinchol were prepared, differing from the preceding merely in having a slightly lower melting point.—*Liebig's Annalen, vol.* 228, p. 288–298.

Myoctonine and lycaconitine, two amorphous alkaloids have been obtained by Dragendorff and Spohn ("Phar. Zeitsch. f. Russl.," 1884, No. 20–24) and were shown to yield, with soda, the decomposition products lycoctonine and acolyctine, discovered by Hübschmann in 1865; also a nitrogenated acid *lycoctonic acid*. The rhizome and rootlets of Aconitum Lycoctonum were treated by Duquesnel's process for aconitine.

Lycaconitine melts at abont 112°C., is freely soluble in ether, alcohol, chloroform, benzol, and acidulated water, has a bitter taste, and yields amorphous salts, the solutions of which are precipitated by the various alkaloidal group reagents. Sulphuric acid dissolves it with a brownish cherry-red color; sulphuric acid and sugar, color reddish brown or black-brown; sulphuric acid and bromine color transiently violet, then brown, and more or less deep violet colorations are produced by Froehde's reagent, vanadio-sulphuric acid, selenio-sulphuric acid and warm syrupy phosphoric acid.

From experiments on different animals made by Dr. Jacobowsky (Thesis, Dorpat, 1884), it appears that this alkaloid is an energetic poison, resembling curare in its action, is constipating, is partly excreted in the urine and fæces, and partly decomposed into compounds which are apparently not poisonous.

Myoctonine melts near 144°C., has a bitter taste, is sparingly soluble

in ether, petroleum benzin and water and freely soluble in alcohol, chloroform, benzol and acidulated water. The salts are amorphous, and their solutions give precipitates with the alkaloidal group-reagents. Sulphuric acid or sugar and sulphuric acid impart a brownish color with a faint reddish tint; warm syrupy phosphoric acid dissolves the alkaloid with a dingy violet color; vanadio-sulphuric acid and Froehde's reagent give no characteristic color reactions.

Experiments made on different animals by Dr. Salmonowitz (Thesis, Dorpat, 1885) show the poisonous action of myoctonine to resemble that of curare; the alkaloid is rapidly resorbed and eliminated through the urine, to some extent also with the fæces.

VARIETIES.

USE OF POTASSIUM BICHROMATE.—Güntz ("Memorabil.") speaks highly of this drug in cases of syphilis which resist treatment with mercury, and in which the constitution has been badly broken down by the disease. Not only is there a complete absence of general disturbance after the use of chromium, but, according to the writer, the cure is rapid and complete. The daily amount which he employs is half a grain of potassium bichromate, divided into four doses. Güntz denies that headache ever followed the use of the drug.—*N. Y. Med. Jour.*, June 6, 1885.

PERMANGANATE OF POTASSIUM IN AMENORRHEA.—Dr. E. J. Doering, of Chicago, says, on this subject: (1) Permanganate of potassium in doses of from two to four grains, is an efficient emmenagogue, if administered for a period of not less than two weeks. (2) Its administration in doses large enough to be effectual is accompanied by severe pain, which frequently necessitates a discontinuance of the remedy, and hence impairs its value as an emmenagogue. (3) The most efficient method of administering the drug is in capsules, taken midway between meals, and followed by large draughts of some pure mineral water, like silurian.—*Chic. Med. Jour. and Examiner.*

SUBCUTANEOUS INJECTIONS OF CYANIDE OF MERCURY IN SYPHILIS.—Prochorow ("Wratsch;" "Ctrlbl. f. Chir.") reports eighty cases of syphilis treated with subcutaneous injections of a one-per-cent. solution of the cyanide. The average number of injections required before the disappearance of active symptoms was twenty. Not more than twenty-five or thirty drops were injected at a time. Only two abscesses resulted from nearly twenty-seven hundred insertions.—*N. Y. Med. Jour.*, June 13, 1885.

ANTIDOTE FOR IODOFORM.—Dr. Behring found tablespoonful hourly doses of a twenty-per-cent solution of bicarbonate of potassium to act as a prompt antidote in iodoform poisoning.—*Louisville Medical News.*

EDITORIAL DEPARTMENT.

CREDIT. The paper entitled "Analysis of Ilex Cassine" which was published in our last number page 389, was read before the American Chemical Society, April 3, 1885, and appeared in the April number of the Journal of that Society, from which it was transferred to our pages.

REDUCED RAILROAD FARES have been secured over most railways for the meeting of the American Pharmaceutical Association to be held at Pittsburg, September 8. Members residing east of Pittsburg and Erie will have to procure, prior to September 4, certificates from Mr. T. J. Macmahan, 142 Sixth Avenue, New York; paying full fare to Pittsburg they will be returned at one-third fare from Pittsburg, or if returning via Washington or Baltimore, the return tickets will be sold from these cities.

Similar arrangements have also been made for the Western members, who may procure the necessary certificates from either one of the following gentlemen: George W. Sloan, Indianapolis; Lucius Lybrand, Noblesville, Indiana; J. W. Tomfohrde, Twenty-second and Benton streets, St. Louis; E. H. Sargent, 125 State street, Chicago, or T. H. Patterson, 3640 Cottage Grove avenue, Chicago.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Fourteenth Annual Report of the Alumni Association of the College of Pharmacy of the City of New York, 1885. Published by the Association. Pp. 94.

The pamphlet contains the minutes of the various meetings, the papers read, account of the commencement exercises, rolls of graduates and members, etc.

Contributions from the Department of Pharmacy of the University of Wisconsin. Madison, Wisconsin, 1885. 8vo, pp. 61.

The papers comprise several essays by Professor Power, and others by students on investigations made by them under the guidance of Professor Power. We shall refer to several of these papers in another place.

Jahresbericht über die Fortschritte auf dem Gesammtgebiete der Agricultur-Chemie. Neue Folge, vi (Das Jahr 1883). Herausgegeben von Dr. A. Hilger, Professor der angewandten Chemie an der Universität Erlangen. Berlin: Paul Parey, 1884. 8vo, pp. 613.

Annual report on the progress upon the entire domain of Agricultural Chemistry. New Series, vol. vi. For the year 1883. Price, in paper cover, 22 marks.

The volume before us is the twenty-sixth of the series and has been prepared by a number of collaborators and edited by Prof. Hilger. The vast amount of material is arranged under the following general headings, each

one having been assigned to a special reporter: Soil, water, atmosphere, the plant (ashes, germination, assimilation, external influences, cultivation, etc.), plant diseases, manure, phytochemistry (including proximate analyses), analytical methods, animals (including food, fodder, excretions and secretions, nourishment, etc.), and accessary agricultural pursuits (milk, butter, cheese, starch and sugars, fermentation, beer, alcohol, œnology, etc.). The subject, it will be observed, is thoroughly covered; the literature has been exhaustively consulted and the abstracts have been made with good judgment, keeping in view their practical utility and importance.

The Australasian Journal of Pharmacy. Published under the direction of the Pharmaceutical Society of Australasia. Melbourne. 8vo.

The first number of this Journal, issued last June, contains upon 22 pages a large amount of information relating to pharmacy in the colonies of Australia. It is intended to take the place of the "Australasian Chemist and Druggist," the publication of which will be discontinued at the end of the present year. The American agents are S. M. Pettengill & Co., 37 Park Row, New York.

Proceedings of the Sixth Annual Meeting of the Kansas Pharmaceutical Association, held at Lawrence, June 10th, 1885. Pp. 51.

Proceedings of the Fourth Annual Meeting of the Massachusetts State Pharmaceutical Association, held in Maplewood Hall, Pittsfield, June 3 and 4, 1885. Pp. 214.

Brief accounts of these meetings will be found on pages 361 and 362 of our July number.

Table of Metric Weights and Measures. Published by Robert J. Crocker, New York.

In a note to the Editor the publisher requests to notice "my card for the conversion, etc." The table is said to be a reprint from the "Druggists' Circular;" but it is merely a copy of the one calculated by us for the "American Journal of Pharmacy," and first published in the volume for 1877, page 92; subsequently also in the National Dispensatory, 1st edition, p. 1561, and 2d edition, p. 1648. The Druggists' Circular, June, 1877, *did* give proper credit to the source from which the information was taken, and a like courtesy might be expected from the present publisher.

Chemical Problems. By Dr. Karl Stammer. Translated from the second German edition, with explanations and answers, by W. S. Hoskinson, A.M., Wittenberg College, Springfield, O. Philadelphia: P. Blakiston, Son & Co., 1885. Pp. 111. Price 75 cents.

Stœchiometrical calculations by students are frequently not practiced to the extent commensurate with their practical importance. The little work before us is an extensive collection of problems on this subject, systematically arranged by elements, the gradation of the problems being from very simple to quite complicated ones. Part second contains problems on approximate ratios, on temperature and atmospheric pressure, and such of a

mixed nature, and finally the answers to the problems, thus affording the students the opportunity of private practice in such calculations. The work deserves to be extensively used by students in chemistry and pharmacy.

Practical and Analytical Chemistry, being a complete course in chemical analysis. By Henry Trimble, Ph.G., Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. Philadelphia: P. Blakiston, Son & Co., 1885. 8vo, pp. 94.

This little work is divided into three parts, of which part I, headed "Practical Chemistry," is designed for the instruction in the preparation of gases and salts. Of both classes of preparations typical cases have been selected, so that their number is limited, but may be obviously readily increased under the guidance of an instructor, the main object of this portion of the book being to familiarize the student with the construction of apparatus and with the various chemical manipulations. The second part is devoted to "Qualitative Analysis," the inorganic bases being arranged in groups as usual, and in each case the characteristic tests are given, which at the end of each group are summarized in such a manner that the results are indicated as obtained with all metals of the group by each reagent; directions for separating the different metals of the group, and pointing out the necessary precautions are not omitted. The bases are followed by the inorganic and a goodly number of the more important organic acids, and by the important alkaloids and neutral principles. The third part treats of "Quantitative Analysis," in two sections, viz, gravimetric and volumetric estimation.

The arrangement of the work is very convenient, so that the facts may be readily grasped by the student. Intended for beginners, the author has judiciously avoided superfluousness and prolixity, and presents a volume, by the aid of which a fair knowledge of chemical analysis may be gained, and which will be found useful also by the more experienced student. Embellished with a number of good engravings, and printed in clear type and upon good paper, the little volume presents also a handsome appearance combined with usefulness.

Report of the Board of Managers of the Pennsylvania Hospital to the Contributors, made Fifth month 4th, 1885. Pp. 72.

Valedictory delivered at the Fourth Annual Commencement of the Medico-Chirurgical College of Philadelphia, April 2d, 1885. By A. S. Gerhard, M.D., Professor of Pathology and Medical Jurisprudence. Pp. 20.

ERGOT IN CONSTIPATION.—Two cases of constipation are reported by Dr. Granzio (*Allg. Med. Zeitung*), which were caused by, or, at least, followed the abuse of purgatives. Three doses of ten grains each were given at intervals of two hours, and were followed by a copious evacuation. A second stool occurred spontaneously the next day, and after the administration of ergot in small doses for a few days a definite cure was obtained. *Med.* and *Surg. Reporter*, April 25, 1885.

OBITUARY.

PROFESSOR DR. HERMANN VON FEHLING was born in Lübeck, North Germany, June 9th, 1812, and died in Stuttgart, July 1, 1885. After finishing his school education, he entered a pharmacy as apprentice and subsequently studied chemistry under Gmelin, at Heidelberg, where he graduated. He continued his studies under Liebig, at Giessen, where, in 1838, he discovered paraldehyde, and made researches on benzoic acid, fulminic acid and other compounds. In 1839 he received a call as Professor of Chemistry and director of the chemical laboratory connected with the Polytechnic School at Stuttgart, where he has since resided, and was in addition to his educational duties, entrusted with labors in other fields as one of the inspectors of pharmacies, as director of a laboratory for technological research, as a member of the medical commission (board of health), etc. The researches in theoretical chemistry were gradually and under the influence of his duties, superseded by such of a more practical nature, notably on analytical methods, and it is one of these—the estimation of sugar by means of an alkaline copper solution in the presence of alkali tartrates—which has made his name well known throughout the civilized world. As a member of the German pharmacopœia commission he naturally exerted considerable influence on the character of this work as far as the chemical properties and the analytical investigations of the admitted preparations are concerned. Aside from the official documents, the papers on his theoretical and analytical researches and a German translation of Payen's industrial chemistry, Fehling's literary labors were prominently connected with the celebrated Handwörterbuch (Dictionary) of Chemistry, commenced by Liebig, Poggendorff and Wöhler in 1842, for some time edited by Kolbe and subsequently by Fehling, under whose supervision the first edition was finished in 1864, and the second, still unfinished, edition commenced in 1871.

DR. THEODOR GEISELER died July 6, 1885, in Koenigsberg, where he was born September 9, 1799. In 1814 he became an apprentice in a Berlin pharmacy, and after clerking for some years in various cities, continued his studies in Berlin where he passed the State's examination in 1824. He succeeded his father in business in his native city and joining the North German Apothecaries' Society, soon became a prominent member and one of its directors. His numerous contributions to pharmaceutical literature were mostly published in the "Archiv der Pharmacie" previous to 1860 and comprise, besides papers on ethical and educational subjects, investigations on galenical preparations, on the valuation of medicinal articles, and on chemicals, such as phosphoric acid, chlorine water, potassium tartrate, ammonium acetate, zinc cyanide, ferrous sulphate, ferrous iodide, lead subacetate, bismuth subnitrate, salts of mercury and others. In 1833 the University of Giessen conferred upon him the title of doctor of philosophy, the subject of his dissertation being amygdalin and bitter almond water; and a number of scientific societies honored him by the election as honorary or corresponding member.

PROFESSOR DR. FRANCIS XAVIER LANDERER was born in Bavaria in the year 1809 and studied philosophy and medicine at the University of Munich. When Otho I was elected King of Greece, Landerer was called to Athens and attached to the school of pharmacy. In 1834 a Commission was appointed for preparing a Greek pharmacopœia. The Commission consisted of Prof. John Bauro, Prof. Landerer and Jos. Sartorius, apothecary to the court, and the pharmacopœia, an octavo volume of 540 pages, was published in the Latin and new Greek languages in 1837. In the same year the University of Athens was founded and Landerer was appointed professor of physics, chemistry and pharmacy, but in 1843 he had to vacate the chair in consequence of a revolution which resulted in the dismissal of the Bavarian officials. No suitable person being found to fill his place, he was reappointed by special act in 1845. In the mean time he occupied also the chair of chemical technology in the Polytechnic Institute without receiving any compensation for the labor, and when his former pupil, St. Krinos, was appointed director of this institute, Landerer was obliged to withdraw from the chair which he had filled gratuitously for 25 years. After the dethronement of Otho in 1862 and the accession of Georg I to the throne, Landerer opened a pharmacy in Athens and soon after resigned also his professorship in the University. In 1831 he commenced to write for Buchner's Repertorium, his communications referring mostly to the origin and uses of Oriental remedies. More recently and up to within a short time of his death he contributed similar brief notes to other Journals, many being on the same subjects which years ago were discussed in the Repertorium. Of late years Landerer's health failed and he was mostly confined to his house or to his bed until his sufferings were terminated by his death, which took place at Athens, July 19 (old style July 7), 1885, at the age of 76 years. The deceased was honorary president of the Panhellenic pharmaceutical society, and an honorary or corresponding member of a number of scientific societies, among them of the American Pharmaceutical Association, and of the Philadelphia College of Pharmacy. Four daughters, of whom three are married, survive the deceased.

PROFESSOR HENRI MILNE-EDWARDS died at Paris in August, 1885, having nearly completed his 85th year. He was born in Bruges, Belgium, October 23, 1800, and studied medicine in Paris where he graduated in 1823. He wrote a work on Materia Medica in 1832 and a hospital formulary in 1840; but he is best known and acquired fame by his researches in comparative anatomy, zoology and in natural history, chiefly on the lower animals such as the Radiata, Mollusca, Articulata, Crustacea, etc. He was first appointed professor of natural history to the Lyceum of Henry IV, and afterwards to the Museum of the Faculty of Sciences. In 1838 he was elected a member of the Academie des Sciences to succeed Cuvier; in 1854 he became a member of the Academie de Médecine, and in 1862 he succeeded Saint-Hilaire as professor of zoology; he was also honorary member of a number of scientific societies.

ERYTHROXYLON COCA, *Lam.*